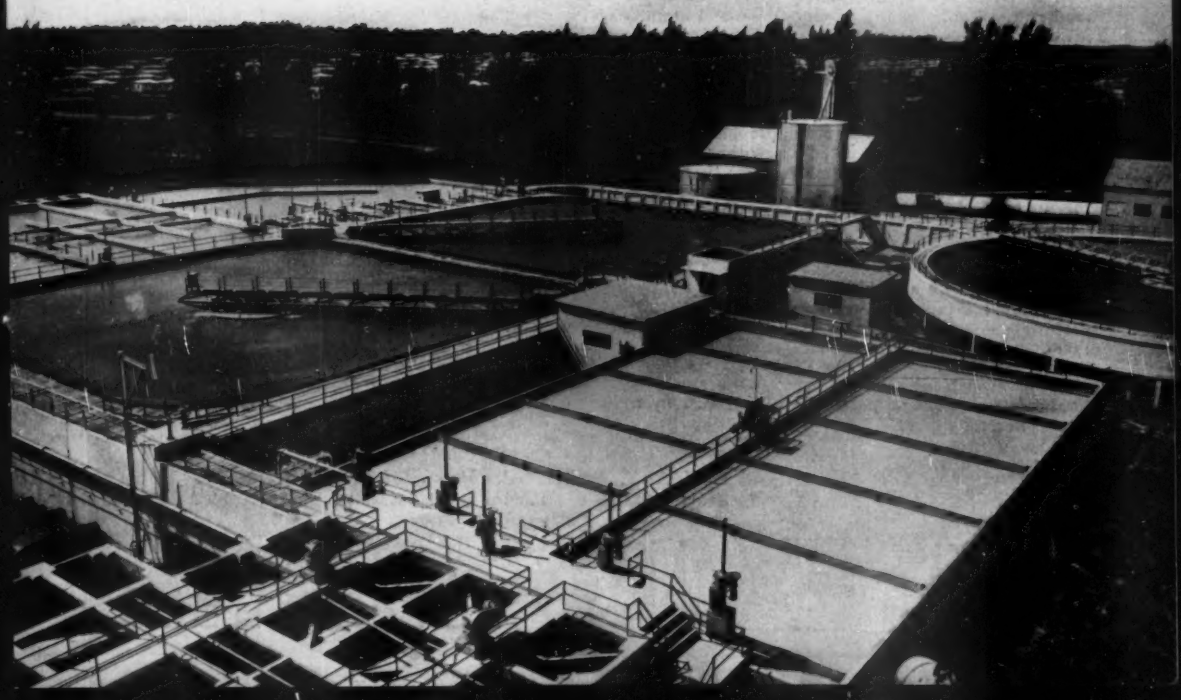
AWWA

MIAMI'S WATER-SOFTENING PLANT, notable for its recalcining of lime sludge, will be inspected by leading water-works officials during the American Water Works Association annual meeting, beginning April 29.

An article describing the lime-recalcining work is carried on pages 124 and 125 of this issue.



An important Houston thoroughfare undergoes a major improvement

before

after

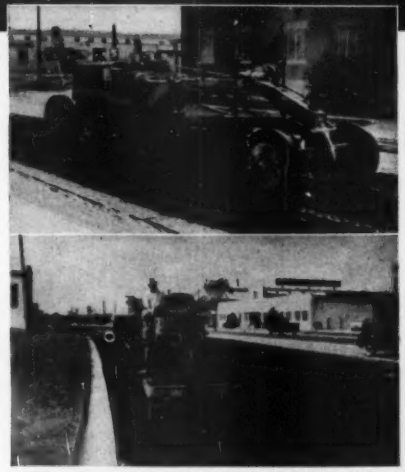
Navigation Boulevard, Houston, Texas, before and after each of its two roadways was widened to 40 feet and the old, rough brick pavement was resurfaced with three courses of resilient, heavy-duty Texaco Asphaltic Concrete by Brown and Root, Inc. of Houston.

Navigation Boulevard, which serves one of Houston's busy industrial areas, carries approximately 17,000 vehicles a day. The city modernized a mile of this boulevard several months ago, in order to provide greater driving comfort, increased safety and freer movement of its traffic.

First, the old 30-foot wide esplanade in the center of the thoroughfare was reduced to 10 feet. This permitted widening each of the street's two roadways to an ample 40 feet. Over the old, rough brick pavement was constructed a new three-course Texaco Asphaltic Concrete wearing surface, whose resilient, rugged, joint-free qualities assure years of economical service under the heaviest traffic. Crushed gravel was employed as aggregate in the hot-mix, hot-laid asphalt pavement, with a 55-penetration Texaco Asphalt serving as binder in the mix.

Together with a number of other leading American cities, Houston, Texas, has indicated its complete satisfaction with the all-around performance of Texaco Asphalt paving by constructing more than 1,000,000 square yards on its street system to date.

Municipal officials may obtain two helpful booklets on Asphalt paving for city streets by writing our nearest office.



The first course of Texaco Asphaltic Concrete was spread over the old brick street by a blade maintainer. The other two courses were put down by mechanical paver.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

TEXACO

REG. T.M.

TEXACO ASPHALT

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THE MUNICIPAL INDEX and ATLAS, used in connection with the current advertisements in THE AMERICAN CITY, places officials in the most favorable position to obtain all types of available equipment and supplies from manufacturers who desire to serve municipal government departments. This 827-page annual is published by The American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y.

See pp. 23, 25, 26, 28, 30, 34, 176, 179, 181, 183, 185, 242 for catalogs and publications on municipal subjects.

List of Coming Conventions, page 154

Index to Advertisers, page 250

Copies of this issue printed, 21,500

New way of handling Long Distance

Operator Toll Dialing proves a big help in these busy days of national preparedness

Long Distance lines are really humming these days. There are many more calls than a year ago. More are from the Nation's industries and Armed Forces, hurrying the country's most important job.

A big help in keeping these calls moving is Operator Toll Dialing — a remarkable new telephone development.

You give the Long Distance operator the number in the usual way. She quickly presses several keys and your call goes straight through to the telephone you want in a distant city.

It makes for faster service — especially on calls that formerly were relayed through other cities.

With so many more calls on the lines, it's a mighty good thing that Operator Toll Dialing was developed and is now available and in use in so many places. About one-third of Long Distance calls are now being handled in this new way.

It is just one of many ways in which the growth and improvement of telephone service are now proving of extra value to the Nation in these days of preparedness.

ANOTHER STEP FORWARD ... *More and more telephone users in a growing number of metropolitan areas can now dial Toll calls direct to nearby places the same way they dial Local calls* ... **BELL TELEPHONE SYSTEM**

Our Municipal Notebook

Political Corruption and Self-Incrimination

A TIMELY PROPOSAL relating to recent crime disclosures is given editorial emphasis in the March issue of the *National Municipal Review*.

"It is shocking and fantastic," says the *Review*, "that officials and policemen who come under suspicion have been permitted in some places to retire on pensions or refuse to testify upon matters relating to their offices on the ground that their answers might tend to incriminate them." And the editorial continues:

Very timely and appropriate, therefore, is the proposal of the Council of State Governments that states adopt laws to remove this impediment to investigation.

In its 141-page volume, *Suggested Legislation*, as developed by a drafting committee of state officials, the Council includes the draft of a proposed act originally suggested by the Chicago Crime Commission.

The act requires an official attempting to hide behind the constitutional provision against self-incrimination to forfeit his office, and prohibits him from holding other office for a period of five years.

Answering the argument that the bill nullifies a time-honored protection, the Council asserts that officials may still exercise their privilege to refuse to testify. It merely provides that "no person serving the public can hide his criminality behind that privilege and still hold public office. An official may assert his constitutional right, but he has no constitutional right to hold his office."

This suggestion should be widely adopted. And there should be other penalties that, as the Council puts it, would "tend to eliminate from public office those individuals whose only desire for public office is to abuse the trust by participating in practices which cannot stand the light of public exposure."

For example, should a policeman who finds it embarrassing to answer questions about his conduct or his bank account be permitted to retire on full pension? Might it not be appropriate for him to receive only the actual amount he has paid into the pension fund?

Public Pay-Rates Trend Upward

A RECENT survey of the Civil Service Assembly of more than 150 state- and local-government personnel agencies indicates that at least 102 cities and states gave moderate pay increases to their employees during 1950. Chiefly, these raises came after the outbreak of the Korean war and in large part reflect the upped cost of living as well as the need to meet competition from defense manpower demands.

At the local level, about 75% of the 115 cities studied reported granting increases to all employees, while 8% raised the salaries of only certain groups.

Special groups benefiting from pay increases were chiefly police and fire employees, and the crafts and skilled trades. Raises for the latter group were based generally on the prevailing rates paid for similar jobs in private industry. Sacramento, Calif., for example, raised the pay of skilled workers to conform to rates set forth in contracts between unions and private employees.

Formulas used by cities to grant general wage raises differed widely. Approximately half the municipalities reporting salary increases gave flat raises applying equally to all levels. For example, in Dallas, Texas, all salaries were boosted $10 monthly and in Nashville, Tenn., wages of all employees were raised $25 monthly last January 1. The average monthly increase for the cities giving flat, across-the-board raises was $15.30, the study showed.

Thirty cities reported applying increases on a percentage basis. Glendale, Calif., upped all salaries 5% last October, and a 4% increase was effective in Winnetka, Ill., the first of the year. Pittsburgh gave the majority of its clerical and white-collar workers a 10% increase on the first $3,600 of their salary. Average increase for cities determining pay boosts on a percentage basis was 7%.

Other cities based their raises on a formal cost-of-living plan, on an index, or on the basis of a salary survey. In Milwaukee, a formal cost-of-living pay plan tied in with the consumer price index, resulted in across-the-board salary increases for all city employees of $16.88 per month, effective the first of the year.

In Grand Forks, N. D., city employees got a pay boost of $10 monthly, effective the first of the year, based on the cost-of-living index for the period ending November 15. The Grand Forks pay plan uses as its base BLS figures of March 15, 1947, when the plan was first adopted. The city is now paying out $30 monthly to each employee under the cost-of-living bonus plan.

In Toledo, Ohio, an ordinance establishing a five-year annual salary-adjustment program was adopted in late 1950. Under the ordinance, the first determination of adjustment would be made on January 1, 1952, by comparing the BLS index average for 1950 with the average for the first nine months of 1951. In the event that the nine-month average index exceeds the 1950 average by 1¼ points or more, an increase of 1 cent an hour will be given all employees for each such increase, based on a 40-hour week. Similar comparison and adjustments will be made annually hereafter.

Effective December 1, Saginaw, Mich., employees were granted an increase of $7 per month or 4 cents an hour in their base salary to offset the upped cost of living for the months of July, August, September, and October. Then, to offset the higher living costs of November and December, a percentage increase was granted to all regular employees on the payrolls as of the end of December. This raise was based on percentage increase in the BLS cost-of-living index for December as compared with May and amounted to 5.8%. During 1951 a similar quarterly adjustment will be made.

At least 20 other local governments have

The American City Quiz

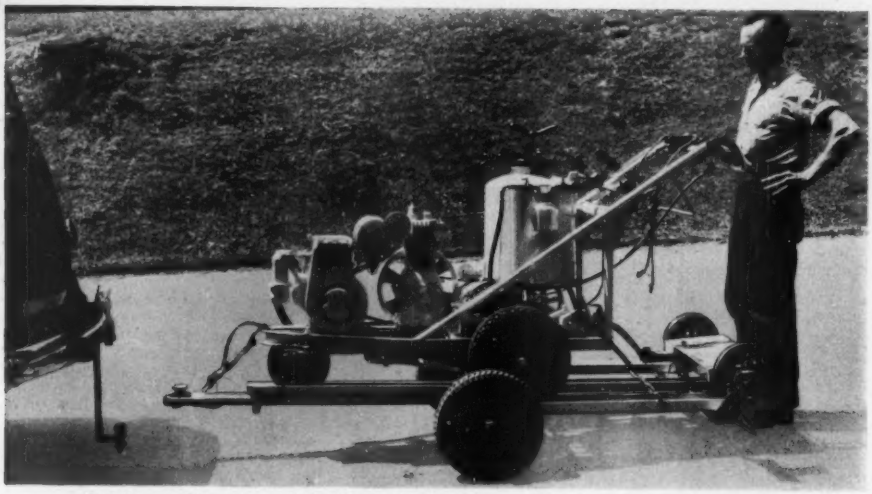
Match Wits With the Experts

QUESTIONS

1. ***What marking system can be used to identify fire-hydrant capacities for the hydrants on a water-distribution system?***
2. ***What quick method is now available to detect E coli in water samples?***
3. ***How can one prevent corrosion in water meters caused by the dissimilarity of metals used in their construction?***
4. ***Does chlorinated copper have a place in water coagulation?***
5. ***How extensively do our cities use policewomen?***
6. ***What is the Daytona Beach Process?***
7. ***In case of a flood emergency, is there any handy method of filling sandbags using ordinary municipal equipment?***
8. ***What permeability rating should diffuser plates have that are used in a sewage-treatment plant?***
9. ***What effect has the use of sodium-vapor lights on traffic handling?***
10. ***How many separate units have to be built for an activated-sludge sewage-treatment plant?***

(Answers on page 9)

finger tip balance



Striping machine mounted on "Carry-Liner" Trailer now ready to be moved to location.

The new "Carry-Liner" Model T2 Trailer is designed to transport the larger type portable striping machines. It is so perfectly engineered to an exact balance, that a finger tip will counter it when loaded. For easy handling the striping machine can be left on the trailer and rolled away for storage. No more strain to your men; and possible damage to the machine is eliminated by the use of the "Carry-Liner" Trailer. When needed the striper is rolled out, locked securely to your car or truck and is ready to be moved to location of operation.

The "Carry-Liner" is constructed of extra strong structural steel mounted on welded axle blocks. The tongue of the trailer is of hinged drawbar type, fabricated of tubular steel and fulcrumed from the axle. The runner tongue is channelled and fitted with a locking arrangement to the trailer tongue. The trailer rides on two 4.00 x 8 Hi-Speed wheels, mounted with smooth working tapered roller anti-friction bearings. Overall dimensions of the "Carry-Liner" Model T2 Trailer are forty-eight inches wide by one hundred twelve inches long and has a tread of thirty-eight inches. The trailer has been tested at fast speed to insure transport of your equipment at legal speeds.

Every crew should be equipped with this new efficient trailer.

Write For Bulletin No. 506

Wald Industries Inc.

MONTGOMERY, PA.

plans in effect which regulate the pay of their employees in proportion to fluctuations in the cost-of-living index. St. Paul, Minn., was the first city to adopt such a cost-of-living pay plan in 1922. The other cities have adopted theirs since 1940.

You Can't Sell Taxes or Gadgets Without Having the Facts

WHETHER it's selling taxes or electric devices the same principle holds: you've got to have the facts to win the most customers and business. You've got to know who are in arrears if delinquencies are to be reduced on an organized and paying basis. This thought sprang from viewing the new Remington Rand film "Dynamic Sales Management."

The hero is a sales manager summoned by the president because sales volume has fallen off. He might just as well be a municipal finance officer summoned by the mayor, city council, or city commission to explain smaller collections and rising delinquency.

Because he didn't have the facts the sales manager couldn't talk too convincingly. He set out to obtain the facts and ended up with a modern records system that gave them to him whenever he needed them. Having them he knew where to push and persuade—and the result was a 28% rise in sales.

Many a municipality now knows the difference in taxes paid between a modern billing and posting system and "the old way." With modern records and controls, current collections tend to be in the high nineties, and arrears are paid off year by year. Because the municipality knows who owes how much for how long.

It is recommended that the local chamber of commerce arrange to show this film to its members and invite city officials to be present. Charley White, sales manager, sorely needed a friend, and he found his through the use of modern business machines. Municipal officials who see the film should also see an opportunity.

Utility Billing Periods Lengthened As Cities Conserve Manpower

UNDER the pressure of personnel shortages arising from the defense program, more municipal utilities are lengthening their meter-reading and billing periods, the Municipal Finance Officers Association reports.

In addition to saving of manpower, the Association pointed out, less frequent meter-reading also permits savings on supplies, transportation of meter readers, and postage on the bills that are mailed out by the municipalities.

The Sacramento (Calif.) Utility District is converting to bi-monthly billing, owing to rising costs of operation. Already some 137 routes, serving more than 31,000 of Sacramento's 90,000 utility-district customers, have been changed to bi-monthly meter reading. Utility officials estimate they will save approximately $83,000 annually when conversion is completed.

A recent spot check by the Association of 50 cities in the United States with a population over 50,000 indicated that at least 40 municipal utilities bill their customers on a bi-monthly, quarterly, or semi-annual basis. Quarterly billing periods were the most popular, being used by 25 cities. Columbus, Ohio, bills its residential users semi-annually, while commercial establishments and manufacturers are billed monthly. Among major cities billing quarterly were Buffalo, Cleveland, Milwaukee, Miami, Denver, New Orleans, St. Paul, and Seattle.

Bi-monthly billing periods were reported by Cedar Rapids, Los Angeles, Dallas, Louisville, Pasadena, San Francisco, and Shreveport. In Los Angeles, where bi-monthly reading of customers' utility meters was first instituted in mid-1943, it is estimated that the city saves $1 annually on each account. More than a million accounts were on the city's electric and water rolls last year.

At the time Los Angeles changed to bi-monthly billing, 709 employees were used in reading utility meters, handling the billing, turning electric services on and off, making investigations, rating credit, and other miscellaneous duties. These employees handled 841,294 active accounts, or an average of 1,187 per employee. Last year, with 1,039,085 active accounts, the number of employees had dropped to 624—an average of active accounts per employee of 1,665.

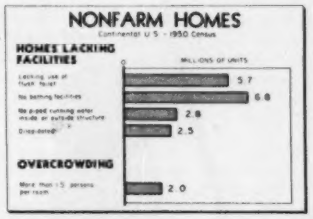
Realtors Forecast the City of 1960

MORE parking space; more freeways from the center of town; an appreciable shift of retail business volume, and spread of industrial areas out from present city centers—these were among the major predictions as to the city of 1960 by 2,095 realtors in a recent survey by the National Association of Real Estate Boards.

Reporting on this survey on March 19, at a community meeting sponsored by the Birmingham Real Estate Board, Alexander

(*Continued on page* 9)

Ten Years of Housing Progress —Much More Needed



THOUGH much progress has been made within the past 10 years, the nation's housing supply still falls short of acceptable standards in terms of both quantity and quality, according to an analysis of preliminary results of the 1950 Housing Census released by the Division of Housing Research, Housing and Home Finance Agency.*

These are some of the major findings summarized in the report; others are depicted on the accompanying chart:

● *Size of Inventory.*—There were 45,875,000 dwelling units, farm and non-farm, in the United States in April 1950. Of these, 39,390,000 were non-farm dwellings.

● *Vacancy Rate.*—The effective vacancy rate for non-farm units was 1.7%. About one-fifth of these vacant units lacked private flush toilet or a private bath, and they tended to be smaller than occupied units.

● *Conditions and Facilities.*—The proportion of occupied non-farm units with a private inside flush toilet increased from 73% in 1940 to 80% in 1950. The proportion with a private bath or shower increased from 68% to 77%.

● *Overcrowding.* — Non-farm dwelling units with more than 1.5 persons per room declined from 7.1% in 1940 to 5.5% in 1950.

● *Size of Household.* — The non-farm household declined from 3.2 persons in 1940 to 3.0 persons in 1950. The number of one-person and two-person households increased by 55% and 45%, respectively.

● *Home Ownership.*—The number of non-farm dwellings owned by their occupants was 19,500,000 in 1950, amounting to 53% of all occupied units.

● *Rent.*—The median contract rent for non-farm dwellings in 1950 was $35 compared to $21 in 1940. The median gross rent was $42 compared to $27 in 1940.

● *Value.*—The median value of non-farm one-dwelling unit structure in 1950 was $7,400. About 30% of owners estimated their homes would sell for $10,000 or more.

● *Size of Dwelling Units.*—Four-room and five-room dwellings accounted for 44% of all non-farm dwellings in 1950. The median size was 4.6 rooms, about the same as in 1940.

● *Type of Structure.*—There were 20,500,000 one-family dwelling-unit structures in the non-farm inventory in 1950, or 56% of all non-farm units, about the same percentage as in 1940.

* "The Housing Situation—1950," Division of Housing Research, Office of the Administrator, Housing and Home Finance Agency, Washington, D. C. February 1951. 30 pp.

There is a plus value built into every

HAMONDTANK

WATER SPHERE

ELEVATED TOWER

STANDPIPE AND RESERVOIR

February 1, 1951

Dear ----------

You are, no doubt, aware that your erection crew under the direction of ---------- have about completed our standpipe and are preparing to move out their equipment. I, therefore, wish to take this opportunity to let you know that it has been a privilege and a pleasure for me to have associated with such a fine group of men on this project.

It is indeed refreshing in this day and age to find a group of workmen of this calibre and I consider your company fortunate. Without exception, they are extremely hard workers, highly skilled and of exceptional character.

I personally feel they have constructed as good a tank as it is possible to build and I am as proud of the job as the men are.

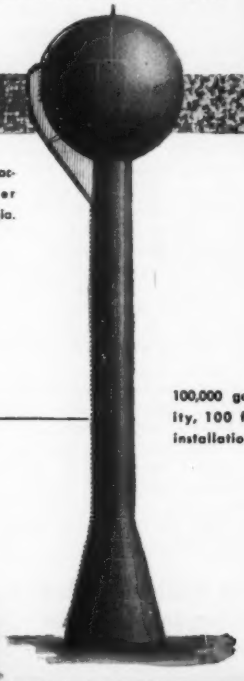
Very truly yours,

---------- Supt.
----- Water Dept.

* *NAME AND DETAILS ON REQUEST*

1,000,000 gallon capacity, 44 feet wide, 89 feet 6 inches high, installation in Connecticut.

100,000 gallon capacity, 100 foot tower installation in Georgia.



100,000 gallon capacity, 100 foot tower installation in Ohio.

100,000 gallon capacity, 50 foot tower installation in Virginia.

HAMMOND IRON WORKS

WARREN, PA. and BRISTOL, PA.

Sales Offices: NEW YORK · AKRON · BOSTON · BUFFALO
CHICAGO · CINCINNATI · CLEVELAND · EL PASO · HOUSTON
LOS ANGELES · PITTSBURGH · RICHMOND · SAN FRANCISCO
WASHINGTON, D.C. · HAVANA · "TIPSA," BUENOS AIRES

Summer, of Newark, N. J., NAREB president, said in part:

"It is automotive transportation, electrical power transmission, and other technological developments seeping into every pore of daily life that will cause this slow but sure change. Already for more than a decade decentralization has been recognized as the outstanding internal force changing the physical pattern of cities and affecting real estate values. Fear of the atomic bomb may also have some influence in augmenting this trend, but it is purely secondary to the deep causes long at work.

"Business volume for the downtown areas of their cities is expected to be greater in 1960 than today by only one-third of the reporting realtors. The outlying areas are expected to get the major expansion from normal population growth and an expanding national economy."

Local Government Needs Receive Little Recognition

THE supply and equipment needs of local governments still do not get adequate Federal recognition, reports Albert H. Hall, Executive Director, National Institute of Governmental Purchasing, Inc., 730 Jackson Place, NW., Washington 6, D. C., in the NIGP *Letter Service* for March 23.

An MRO order (giving priorities for the purchase of maintenance, repair and operating supplies and equipment) has been issued by the National Production Authority in connection with its Regulation 4. The regulation, which can be used both by private business and by state and local governments, permits application of a priority rating, identified as DO-97, without individual authorization by NPA, and this rating is equal to all other DO ratings and is fully extendible. But if the DO-97 rating is used, even on a single occasion, MRO purchases are then limited in any one calendar quarter to one-fourth of the dollar purchases for maintenance, repair and operating purposes in 1950 (or the fiscal year ending nearest to December 31, 1950).

A "Hunting License"

Mr. Hall reports that public purchasing officials should feel free to make the widest possible use of the MRO order, but he points out that the order is so widespread that MRO priorities now are only a "hunting license." Another discouraging factor is that, although a Government and Public Service Division has been established in the Office of Civilian Requirements of the NPA, this new Division is primarily an information center, rather than a claimant agency.

Under Commerce Department Order No. 127, a number of federal agencies have been designated as claimants on behalf of state and local governments. "However," the NIGP points out, "These claimant groups are already sending out questionnaires to states and cities, seeking requirement estimates and in general are conducting an uncoordinated approach to the problem of supplying the American community. Furthermore, when a public purchasing executive comes to Washington to seek help in connection with construction, supply and equipment problems, he must make a round of agencies, receiving frequently conflicting information on the same problem."

Mr. Hall recommends the following measures on behalf of state and local governments: A higher priority than a DO-97 for some maintenance, repair and operating supplies; a priority rating in the public construction field; a single claimant agency for all state and local supply and construction needs in place of the present diffused, cumbersome and inefficient arrangement; participation by state and local representatives in advisory groups assisting NPA, OPS, and other control agencies; effective price controls; a recognition in the new CMP (Controlled Materials Plan), now being drafted, of the essential character of local government services.

Kansas City's Good Government Is Still Safe

DETERMINATION to maintain Kansas City's outstandingly high level of good government was clearly apparent in the municipal election on March 27, as candidates endorsed by the Citizens Association retained control of the city government by overwhelmingly defeating Democratic machine forces led by James Pendergast. Mayor William E. Kemp, heading the Citizens ticket, was elected to a third term, and the Citizens Association, a coalition of Republicans, Independents, and anti-machine Democrats, also won eight of nine posts on the City Council. Staunch newspaper support of the city administration and L. P. Cookingham, City Manager, featured the campaign.

The American City Quiz

(ANSWERS TO QUESTIONS ON PAGE 5)

1. The Maine Water Utilities Association recommends a color scheme. Green hydrants can supply 1,000 gpm or more. Orange hydrants can supply not less than 500 gpm. Red hydrants supply less than 500 gpm.

2. The RCA Electron microscope allows detection of *E coli* in water samples in 15 hours instead of the three or four days that ordinary methods require. One microscope enlarges 50,000 to 100,000 diameters. A smaller model will enlarge to 50,000 diameters. At 30,000 diameters, many bacteria appear 0.4 to 0.8 inches in diameter, and 1 to 4 inches long.

3. Anton Zoeller, Superintendent of Meters, Hackensack, N. J., drew on the Bridgeport Brass Company to supply Duronze bolts for the meters. In addition, he uses porcelain-covered cast iron bowls. This prevents corrosion that may occur where the meters have bronze tops and cast iron bottoms. The Duronze bolts can be turned easily, even after 10 years of service.

4. In Lawrence, Kans., Water Superintendent M. C. Hagar believes it does. His city draws water from the badly polluted Kaw River with as much as 20,000 ppm of silt, much in colloidal form. He uses prechlorination, flocculation with alum and copper blended in a hammermill, and softening chemicals following primary coagulation. The greater the concentration of silt, the more copper he uses.

5. The International City Managers' Association reports that full-time policewomen are on duty in at least 161 cities. Of 34 cities, with a population over 250,000, 29 have policewomen. Of 429 cities, with a population between 10,000 and 25,000, only 51 have policewomen. Pittsburgh has 166; New York, 154; Detroit and Los Angeles, 72, and Chicago, 68.

6. It is a system in sewage treatment which uses upflow clarifiers normally used in water treatment. It was developed in the city that carries its name, and uses lime sludge from the softening plant in the process in an Infilco Accelator, although it can use any high-calcium lime dust. The sludge cake can be dewatered by vacuum filter without digestion and creation of odor nuisance, and put directly on a landfill. Joe Williamson, Jr., of Russell and Axon, Daytona Beach consulting engineers, reports that with two-hour treatment, a BOD reduction of 85% can be obtained.

7. Springfield, Mass., used a Hough front-end loader to fill a Baughman sand spreader. Street Superintendent Charles Bailey removed the spinner from the sand spreader so that the belt discharged directly into the sandbags. Ten men with this equipment filled sandbags faster than 30 men and shovels.

8. N. E. Anderson, Engineer of Treatment Plant Design for the Chicago Sanitary District, likes air diffusers plated with a permeability rating of 80. Air first passes through bag filters, and then through electronic filters to reduce the dust content from 9.0 milligrams to less than 0.5 per 1,000 cubic feet.

9. The distinctive yellow light has come to be regarded as a warning. This lighting is used chiefly at underpasses and with definite accident-reduction at dangerous intersections. For instance, putting sodium-vapor lights at the Duquesne traffic circle, Duquesne, Pa., cut traffic accidents to 75% of the figure occurring during the prior 12 months, according to Walter Wier, Chief of Police.

10. The number depends on the ingenuity of the designer. For example, in Colton, Calif., the Currie Engineering Company designed the primary clarifiers and aerators together. The clarifiers are round, and the aerators form a circular ring around them. Only the final settling tank is separate. The combination clarifier-aerator is called a Claractor.

Send in your suggested questions with the answers on municipal topics for use in this feature. The AMERICAN CITY will make a small payment for each question accepted.

HOW THE PLUS VALUES OF HORTON ELEVATED STORAGE HELP DECATUR

With the installation of a new 2,000,000 gallon Horton tank, Decatur, Alabama, is once more relying upon elevated storage to bring its water system up to par. Since 1947, a 1,000,000-gallon Horton tank has been in service and the satisfying results have convinced this city of 23,000 that only modern, proven methods bring such superior performance.

Many cities throughout the country know that the combination of gravity pressure and a ready supply of water result in these plus values of Horton elevated tanks:

+ More uniform water pressure throughout the city
+ Higher average water pressures
+ Lower pumping costs
+ More dependable water supply for emergencies

Add each of these positive values and the sum total is a better municipal water system, and above all, greater consumer satisfaction for years to come.

The 2,000,000-gallon Decatur tank utilizes a radial-cone bottom to reduce the range in head. As a result, pumping costs are substantially less than they would be if a deeper tank were used.

Horton elevated tanks with radial-cone bottoms are built in standard capacities ranging from 500,000 to 3,000,000 gallons.

Write our nearest office today for more details or estimating prices. There is no obligation.

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STORAGE TANKS

CHICAGO BRIDGE & IRON COMPANY

Plants in Birmingham, Chicago, Salt Lake City, and Greenville, Pa.

Atlanta 3	2114 Healey Bldg.	Los Angeles 17	1503 General Petroleum Bldg.
Birmingham 1	1502 North Fiftieth Street	New York 6	3308-165 Broadway Bldg.
Boston 10	1002-201 Devonshire St.	Philadelphia 3	1616-1700 Walnut Street Bldg.
Chicago 4	2127 McCormick Bldg.	Salt Lake City 4	501 West 17th South St.
Cleveland 15	2236 Guildhall Bldg.	San Francisco 11	1533—200 Bush St.
Detroit 26	1501 Lafayette Bldg.	Seattle 1	1301 Henry Bldg.
Havana	402 Abreu Bldg.	Tulsa 3	1625 Hunt Bldg.
Houston 2	2101 National Standard Bldg.	Washington, D. C.	Gafritz Bldg.

Water Supply and Treatment

AWWA Elects Officers

ACCORDING to an announcement by Harry F. Jordan, secretary of the American Water Works Association, Inc., 521 Fifth Avenue, New York 17, N. Y., the following are the new officers of the Association for the coming year: President: Dr. A. E. Berry, Director of Sanitary Engineering Division, Ontario Department of Health; Vice-President: Charles H. Capen, Chief Engineer, North Jersey District Water Supply Commission, and Treasurer: William W. Brush, Editor, *Water Works Engineering*.

The officers-elect will be installed on May 4, 1951, at the close of the Association's 1951 annual conference, and will serve until the close of the 1952 annual conference, or until July 1, 1952, whichever date is earlier.

Pittsburgh to Try Fluoride

MAYOR DAVID L. LAWRENCE, of Pittsburgh, Pa., submitted with his 1951 budget a recommendation to the City Council "that it add $25,000 to the budget for the initiation of a fluoride addition to the city's water supply, which has been recommended strongly by the dental profession and public-health experts as a means of protecting our children's teeth."

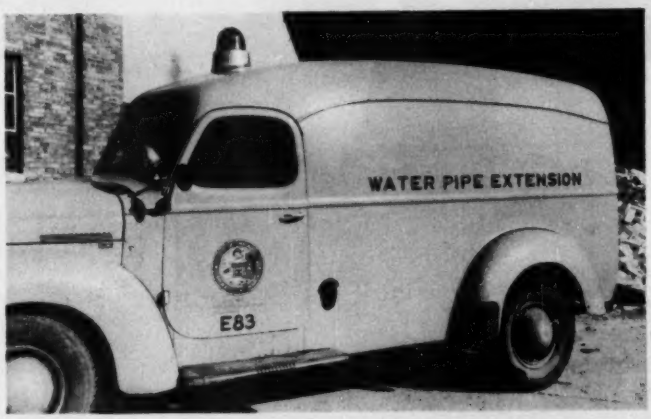
Councilman Walter R. Demmler reports to THE AMERICAN CITY that "the proposal for fluoride to be used in our water supply was adopted and the money is available for a start when the study has been completed."

Repair-Crew Warning Light

WATER-WORKS repair crews will be safer in Chicago now that their service trucks are equipped with Federal 360° warning lights. These lights were originally designed to assist police cars, fire apparatus, or ambulances on emergency runs. The beacon of warning cleared the way and proved invaluable in protecting such vehicles when stationed at the scene of an emergency.

The Chicago Water Division frequently has to assign men to work in climbing in or out of trenches or manholes at busy streets or at intersections —in constant danger of being struck by careless drivers. Crews also handle long lengths of pipe or other materials that often are a hazard to passing traffic. This Federal Beacon Ray light is expected to prevent possible accidents. The light is mounted on the truck. Its twin-beam, intense spotlights, mounted back-to-back, project a warning for several blocks.

The light may be obtained in blue, green, or amber where red is not desired. Federal Enterprises, 8756 S. State St., Chicago, Ill., are the manufacturers.



This new top-of-cab warning light on the service truck, a product of Federal Enterprises, Inc., of Chicago, promises greater safety to the repair crew.

Handy for Distribution Work

Nothing is quite so handy and useful as a Bucyrus-Erie Hydrocrane for general work around a water-distribution system. This has been the experience of A. P. Kuranz, Manager of the Waukesha (Wis.) Municipal Water Utility. The Utility uses its mobile crane for digging manholes, replacing main-line valves, handling cast iron fire hydrants, unloading reinforcing rods, pulling pump and well pipe, lifting out pump motors, and many other tasks. Mr. Kuranz has also found that the Hydrocrane does an excellent job in repairing and replacing leaking services, and in the installation of new services and new cast iron pipe.

MORE VERSATILE!

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- Berm Leveler
- Broom
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- Patch Roller
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Street Cleaning and Refuse Disposal

New York City Cleaned by $20,000,000 Collectors and Sweepers

THE first refuse-collection trucks and street sweepers delivered to the City of New York since Mayor Vincent R. Impellitteri's election were inspected by him on January 19, 1951, in front of City Hall. The 15 collectors and the two sweepers on view were the first of 210 and 20, respectively, purchased at a cost of $1,999,347 for the collectors and $191,000 for the sweepers.

The new compaction trucks compress garbage, ashes, rubbish, and even orange crates. Each truck has an International Harvester chassis on which is mounted a 16-cubic-yard body manufactured by the City Tank Corporation, of Corona, N. Y. "This will be the first fleet of collection trucks ordered by the Department of Sanitation in recent years in which bodies have been manufactured in New York City," said Commissioner Andrew W. Mulrain.

The street sweepers, bought from the Wayne Manufacturing Company, of Pomona, Calif., are equipped with twin brooms and controls. They permit cleaning both sides of one-way streets, express highways or roadways with islands, and are capable of cleaning 15 to 20 curb-miles of street daily.

The 1,525 collection trucks owned by New York in 1948 will have grown to 2,044 when all deliveries are complete, an increase of 519 trucks, or 34%:

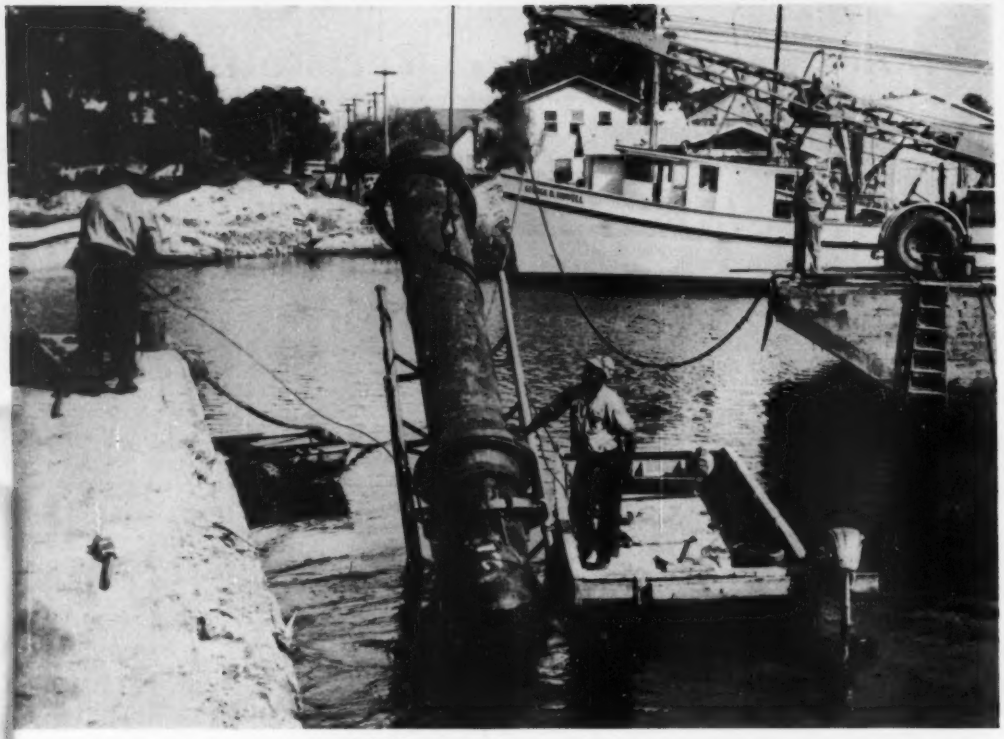
Mechanical-conveyor type	
Autocar chassis and Heil body....	189
Hydraulic-conveyor type	
Autocar chassis and Heil body....	281
GMC chassis and Gar Wood body	154
Batch-compaction type	
Reo chassis and Gar Wood body..	1
Reo chassis and Sanivan body....	1
Autocar chassis and Gar Wood body	200
GMC chassis and Gar Wood body	200
Box type	
White chassis and Gallanot-Van Dorn body	29
GMC chassis and Heil body	278
GMC chassis and Gar Wood body	272
Escalator-compactor type	
Autocar chassis and Heil body....	42
International-Harvester chassis and City Tank body.....	210
GMC chassis and Heil body.....	8
Conversion type	
GMC chassis and Baldt body	1
GMC chassis and Gar Wood body	101
GMC chassis and City Tank Body	62
Hoist-fitted chassis, 88 containers....	15
	2,044

Street sweepers, 65 in 1948, now number 94: 70 Guttersnipes, 21 Waynes, 2 Wilshires, and 1 Austin-Western.

Mayor Impellitteri and Sanitation Commissioner Mulrain on an inspection tour.

Firewood from Driftwood in Rochester, N. Y.

"Water over the dam" is a problem in Rochester, N. Y. Often during the flood season, water goes over the dam and carries logs and other debris with it. When the river subsides, the logs are cleared away before they are washed further downstream. Above, the Department of Public Works puts its Lorain crane to work removing the drifted logs, which will later be used for firewood.



A Typical SUBMERGED PIPE LINE Installation by BOYCE COMPANY, Inc. Pipe Line Contractors

Above is a photograph of the 24″ cast iron water main across Hillsborough River constructed in 1950 for the City of Tampa Water Department by Boyce Company, Inc.

The construction method employed permitted continuous boat traffic through the channel. The pipe line, installed in a trench 8 feet deep under the channel, operates at 112 pounds maximum water pressure.

This line is part of the current $3,500,000 extension program of the City of Tampa. Robert and Company of Atlanta, Georgia, were the engineers on this project. All work was under the direction of Mr. John S. Long, Superintendent, Tampa Water Department.

BOYCE COMPANY, Inc.

CLEARWATER, FLA.

SUBMERGED PIPE LINES ALL OVER THE WORLD

South's Largest Biofiltration System

New two-stage biofilter plant in Orlando, Fla., gives full treatment for 40,000 winter tourists as well as 80,000 residents. The city and David B. Lee, Chief Sanitary Engineer of the State Board of Health, worked jointly to remove the greatest source of groundwater pollution in the area. Average flow is 8 mgd; peak flow, 16 mgd, with a 5-day BOD of 325 ppm. Equipment includes four 120-inch-diameter Dorr S-7 clarifiers and four 120-inch-diameter Dorreo distributors for primary and secondary treatment. A. B. Herndon is the City Engineer; consulting engineers were Smith and Gillespie, of Jacksonville, Fla.

When Building a Sewage-Pumping Station

WHEN one builds a sewage-pumping station, two guiding principles should be simplicity of maintenance and economy of construction. How these two principles can be worked into pumping-station practices was explained by Richard R. Kennedy, of the firm of Clyde C. Kennedy, consulting engineers, of San Francisco, Calif., at the recent meeting of the Federation of Sewage Works Associations held in Washington, D. C.

The pump discharge lines should be short, Mr. Kennedy explained. Sewage deteriorates rapidly in closed pressure pipes and this deterioration should not be encouraged.

Favorable location helps greatly. If the station can be placed after the sedimentation tanks, pump stoppages can be reduced markedly. If it follows grit removal, wear on the pump impellers will be reduced.

Centrifugal pumps have been developed so that they will handle the solids in sewage without too much difficulty. Special impellers have been developed so that the pumps can pass large solids. And pump clean-out openings make maintenance not too difficult.

Small pumping stations can be simplified. Mr. Kennedy explained. He cited the use of wet-pit submerged vertical pumps. The station can be constructed by using an oversize manhole with opening mounted in a concrete slab. If the pump is mounted in the manhole frame, the pump and motor can be removed except for one fixed side of the structure which carries the electrical-control panel.

This type of station can be easily connected with an above-ground pump discharge, and can be easily disconnected. Mr. Kennedy stated that he has used Fairbanks-Morse bladeless impellers with good results.

For an alternate, he has used two adjacent sections of precast concrete pipe placed vertically, with connecting piping. One acts as a wet well and the other as a dry pit for the pump structure. This allows complete underground installation. He recommends the Chicago Pump Company's Flush Kleen system for these installations.

An Odor Problem Solved

THE problem in Nutley, N. J., was waste disposal. This particular disposal problem was not of liquid wastes that go to the sewer, nor solid wastes that a refuse crew can collect, but of air-borne wastes from a local industry. These wastes, resulting from the manufacture of a vitamin product, had a tenacious garlic-sulphide stench similar to mercaptans or hydrogen sulphide. Moreover, the odor seemed to cling to clothing, making one conscious of the odor for many hours afterward.

The company quickly recognized its civic responsibility and tried hard to eliminate the nuisance. It first tried an alkaline solution designed to absorb the acid sulphide smell, but such a scrubber did not work. Then it turned to alkaline sodium hypochloride solution, but this would not oxidize the odors. Acid oxidants also appeared unequal to the task. Even ozone was considered, but the great expense involved, plus the lack of surety that the method would work, ruled it out except as a last resort.

A more practical alternate appeared in the use of Dorex-activated carbon filter canisters. The designers used a low-speed exhaust fan drawing 12,000 cubic feet per minute of air through a manifold-duct system that collects not only the odor-laden air but also air from the entire building. The fan forces this air through a bank of 503 Dorex charcoal canisters. These will pick up between 300 and 400 pounds of air-borne material in a six-month cycle.

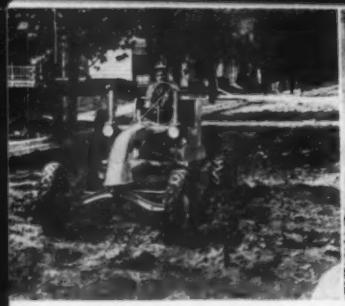
To regenerate the canisters, the plant sends them back to the W. B. Connor Engineering Corporation, manufacturers of the canisters. This company reactivates the material, reclaiming about three-fourths of the original charge.

How to Make Chlorine Twice as Effective

IN THE design of a sewage-treatment plant, the chlorine requirements can be cut in half by increasing the chlorine contact period from 5 to 30 minutes. This was one of the findings of Dr. H. Heukelekian and Morris B. Smith, of the New Jersey Agricultural Experiment Station, New Brunswick, N. J.. The investigators were studying the effect of chlorine dosage on residual coliform organisms. The complete paper appears in *Sewage and Industrial Wastes*, Vol. 22, p. 1509. The work was supported by a fellowship grant from Wallace and Tiernan Company, of Newark, N. J.

The primary finding was that a plant cannot expect to achieve a stipulated residual-coliform-organism count based on chlorine dosage alone. This is caused by the variations in the sewage samples. Stale sewage requires more chlorine than fresh for the same contact period.

Their findings also disclosed that dilution of settled sewage to the same suspended-solids concentration as the effluent from a trickling filter, results in the same amount of chlorine required to achieve a stipulated coliform organism residual with 30-minute contact time. With five-minute contact time, filter effluent required somewhat more chlorine to give the same residual-coliform-organism count than did the diluted sewage.



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Loads sand, gravel, snow, other bulk material . . . surplus dirt from roads and streets. Rear-mounted, ¾ cu. yd. bucket, hydraulically controlled.

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WEIGHT — 8,500 lb. (bare)
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Plows snow. Interchangeable V or blade-type plows, hydraulically controlled. Blade plow also backfills, handles light 'dozing.

Hydraulically controlled **WINDROW ELIMINATOR** feathers out windrow left by grader blade — saves extra passes.

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Airports and Aviation

Airport Taxiing Signs Cut Tower-Radio Instructions

REFLECTIVE directional-airport-taxiing signs have gone a long way toward solving the ground-traffic-control problem at the Boston Logan International Airport. They have proved to be of great help to pilots and control-tower operators alike. Pilots, especially those using the field for the first time, find these signs save a large amount of radio conversation with the control tower, particularly at night when visibility is poor.

The Sign Division at the Airport installed 50 of these signs. Each averages about 3 feet by 4 feet, depending on the plywood sections available. The entire surface is covered with Scotchlite. By day, the sign surfaces brightly reflect the natural skyline. At night, the light from the taxiing plane's landing light, as well as that from the taxi and runway lights on the field, cause them to stand out prominently, compared with signs that are covered with conventional paint.

This is one of the 50 signs at Logan Airport that guide incoming pilots.

In general, the signs are weighted down with railroad irons and mounted so that they are portable. In this way, they can be moved near the taxiway or runway in summer, and further away in winter to permit snow plowing. Out of 50 signs, only one blew away during the November hurricane.

We experimented with white letters on a black background, which takes a minimum of Scotchlite but a maximum of cutting. With proper spacing, the white Scotchlite on a black background is most legible at night. However, we decided that it was better, quicker, and cheaper to use white Scotchlite over the entire sign and paint the letters in black. Even though the letters may not be as legible at a longer distance, the reflection from the preponderantly white background gives a warning signal to the pilots long before the sign can be read.

ALBERT L. EDSON
Airport Manager
Logan International Airport
Boston, Mass.

Facsimile Map Aids Airport Field-Vehicle Drivers

THIS map of airport runways, taxiways, aprons, and service roadways, painted on the dashboard of all airport service trucks and field vehicles, helps drivers to reach any part of the field more quickly. Runway numbers and other important designations are clearly marked.

Since these field vehicles are usually equipped with two-way radio on most of the larger airports, this type of map helps the servicemen in carrying out control-tower radio instructions, and it increases the operating safety of the airport.

In order to install these maps on the field-vehicle dashboards at this airport, 5-inch-by-7-inch decalcomanias were made up and very little time was required for the transfer process. The installation pictured here is on a field-service truck of the Port of New York Authority at LaGuardia Field.

The map on the dashboard tells how to get where service is needed. It was placed by a decalcomania supplied by Palm Fechtler & Co., New York. The driver uses a Utiliphone made by National Electronics, Inc., Washington, D. C.

Administration Building Has Steel Walls and Roof

THE use of fluted-steel exterior walls and roof for the new administration building at MacArthur Airport, Islip, Long Island, N. Y., cut the construction time and provided an attractive, insulated structure at a cost considerably less than that of conventional building-construction materials. Known as Robertson "Q-Panel" construction, the walls and roof are made up in 2-foot widths and in lengths up to 25 feet. Panels are lightweight, are very strong, and have high insulation and vapor-seal properties.

The building used 7,300 square feet of steel roof-decking and 1,500 square feet of steel siding. The steel roof and wall material had a protective metallic coating, thus eliminating the need for further painting.

Robert H. Edwards, of Sayville, was the architect for this building, and Petroff and Clarkson, the consulting architects. The contractor was Fisher-Malick, Incorporated, of Islip, and the building was planned and designed under the general supervision of Fred Smith, Airport Manager, and the Civil Aeronautics Administration's Region 1 Office of Airports. It was constructed under the sponsorship of the CAA Federal Airport Program and local funds.

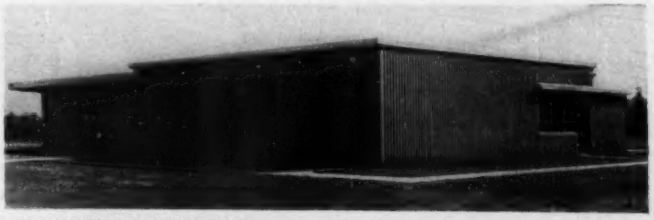

PHOTO COURTESY OF ISLAND AIR FERRIES

Steel walls and roof, used in construction of new Administration Building at MacArthur Airport, Islip, N. Y., reduced construction time and building cost.

ADEQUATE PROTECTION?

NOT IF AN ALARM BOX IS MORE THAN 500 FT AWAY!

In residential districts it should not be necessary to traverse more than one block, or 500 feet, in order to reach an alarm box. Fire tragedies follow *Delayed Alarms*.

★

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Public Safety

New York Police Study Radiation Reading

SOME 3,000 New York City policemen are being given radiac (radiation detection) training under the direction of Carl B. Braestrup, a New York City physicist, says Commissioner Arthur W. Wallander, Director of the New York City Office of Civil Defense. Should New York City be struck by an atomic bomb, radiac teams will have the task of going into the devastated area to measure the amount of radiation which is present. The 3,000 policemen who are being given radiac training will be in squad cars equipped with geiger counters and they will converge on the devastated area and make preliminary radiation readings. They will report their readings to a central point, and then more highly trained radiac teams will be sent out to make more exact radiation readings, and, if necessary, post warnings in areas where there is a dangerous amount of radiation.

Do You Smoke in Bed?

ON July 17, 1948, we were called to a fire in a hotel room occupied by a husband and wife. It was caused by smoking in bed. The couple were smoked up a bit, so we gave them a few whiffs of oxygen and a lecture on the evils of smoking in bed, cleaned up the mess, and returned to quarters.

On June 8, 1949, at 12.22 a.m., there was a fire in a hotel room occupied by a husband and wife; in fact, it was the same hotel, the same room, and the same couple as a year previous. This time the couple got smoked up a bit, and the woman was burned. We gave them some whiffs of oxygen, shipped the woman to the hospital, gave the man a lecture on the evils of smoking in bed, cleaned up the mess, and returned to quarters.

On June 19, 1949, at 5:35 a.m., we had a fire in a hotel room occupied by a husband and wife. You guessed it—it was the same hotel, the same room, and the same couple. This time the couple were knocked out and burned; in fact, the woman was dead. The man was shipped to the hospital, where he died three days later from shock and burns. There was no chance for a lecture this time, for both were unconscious when we got there.

So ends the story of Mr. and Mrs. Gus Sampson—three fires, two lectures, and two funerals. It seems that people and not things really cause fires.

(From a letter to the National Fire Protection Association, Boston 10, Mass.)

ROBERT ROGERS
Assistant Fire Chief
Seattle, Wash.

Mutual Fire Aid Is County-wide

EVERYBODY knows that firemen like good equipment. They like it to look good, and the character of their work definitely requires that it be efficient and reliable. They also approve of training, because whether or not they actually enjoy it they know that the results are essential to their job. This is true of volunteers as well as of paid firemen. "Volunteers," says Chief Leo Barry, of the Utica (N. Y.) Fire Department, "cannot be expected to maintain interest in fire service if they lack a variety of equipment or lack strong organization." It is important to know this in these days when civil-defense auxiliary fire organizations are being established.

Chief Barry was instrumental in building up the mutual-aid system in Oneida County. It consists of 43 fire departments, exclusive of Utica and Rome, with 2,000 working volunteers. The departments are now buying equipment to fit into the county-wide pattern. All are hooked together by radio, with a county technician who keeps all the sets in order.

Electronic Property Protection

THE electrical engineer of a big city asked this magazine what kinds of anti-sabotage systems are available. Was there anything new—perhaps on the electric-eye principle?

The photoelectric method of turning street lighting on and off automatically has been in use for over 15 years. Meanwhile, electronic controls have been extended to the performance of many other functions, including automatic burglary detection.

The principle is simple. An exciter lamp sends an invisible light-beam to a photo-cell. Any person crossing this light-beam activates the alarm bell or whatever. A photoelectric set consists of the photo-cell and an electronically operated relay in a single housing, and the exciter lamp. Relays and lamps are selected in pairs so they will work together over the same effective distance —100, 150, 250, or 500 feet.

Entry at windows, doors, or through yards can activate visible or audible alarm signals. With central-office control, the exact location of entry can be reported on a panel board. Entry of this variety may be reported by signal or can be frustrated by automatic, surprise floodlighting. Where the trespasser evades force-of-entry by concealing himself inside a building before closing time, his movements are detected when he intercepts a light-beam of a concealed photoelectric set. By the use of mirrors, these light-beams can criss-cross the interior effectively.

Electronic eye detects the intruder.

This type of equipment is manufactured by Worner Electronic Devices, West Main St., Rankin, Ill. Their functioning is clearly described in the company's Bulletin 850, which may be written for.

Traffic Signs in Italian in New York

THE introduction of traffic-control signs inscribed in a foreign language is a novel feature of a major pedestrian-protection installation just south of Greenwich Village, in an area composed largely of residents of Italian extraction. The signs read: "Passagio per pedoni." Commissioner of Traffic Lloyd B. Reid indicated that once the residents become familiar with the designated crosswalks, the signs will be removed.

Adams Motor Graders Build New Streets Faster

ONLY ADAMS OFFERS ALL THESE OUTSTANDING ADVANTAGES

- 8 Overlapping Forward Speeds
- High-Arch Front Axle for Clearance
- Push-Button Starting from Cab
- Positive Mechanical Controls
- Wide Range of Blade Adjustments
- Exceptional Blade Clearance in All Operating Positions
- Balanced Weight Distribution
- Easy Access for Fast Servicing
- World-Wide Dealer Service

In hundreds of cities and towns, the country over, Adams Motor Graders are saving time and money on all types of projects . . . building, rebuilding and maintaining city streets and alleys — backfilling over sewers, water mains and gas pipes — leveling playgrounds, parks, parking areas, etc. . . . You'll find in the Adams line a model with the right power and right capacity to meet individual needs exactly. Ask your local Adams dealer for complete information on the machine best suited to your requirements.

J. D. ADAMS MANUFACTURING CO., INDIANAPOLIS, IND.

Make your next motor grader an **Adams**

Street Construction & Maintenance

Linseed-Oil Protection For Kansas City Streets

THE new concrete pavements laid last fall by Kansas City, Mo., received a protective coating of linseed oil before going into the winter season, according to L. P. Cookingham, City Manager.

The oil was placed in two applications. The first was at the rate of one-tenth gallon per square yard and was composed of one part linseed oil, one part linseed-oil thinner, and four parts water. The second, also applied at the rate of one-tenth of a gallon per square yard, was composed of one part linseed oil and seven parts water.

The cost of the materials for the job was $1,800 and the area treated was 27,000 square yards.

Some Street Alignment Principles

WHEN new subdivisions are developed, the following principles will aid the engineer in laying out the street system so that the area will encourage comfortable growth:

1. Alignment should fit topography.

2. Dead-end streets or cul-de-sacs should be used only when topographic conditions make it necessary, or when the shape of the area being sub-divided into home sites prevents any other solution. The outside radius of the turn-around at the end of the cul-de-sac should be not less than 50 feet—preferably 60—and the maximum length of the cul-de-sac should be about 400 or 500 feet.

3. Compound and reverse curves should be avoided, particularly when the curves are sharp. Tangents should connect curves of the same or contrary flexure.

4. Long blocks up to 1,200 feet are acceptable if the length is in the direction of heavy traffic flow.

5. Minor streets should intersect major streets at right angles, or nearly so.

6. Side-lines of lots should intersect street lines at about 90 degrees, or along the radii of curves.

7. Acute angles at lot corners should be avoided.

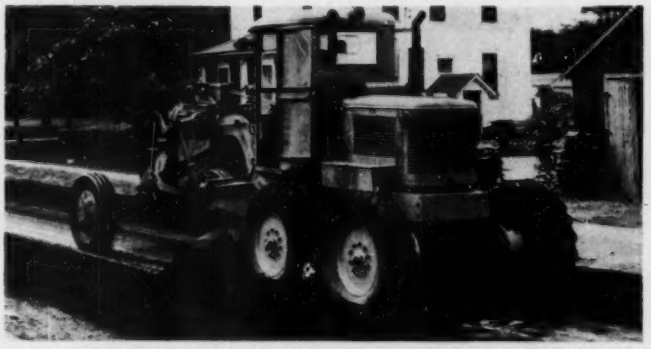
8. Under average conditions, lot depths from 120 to 130 feet are best. Depths greater than 150 feet are undesirable except for estate property developments.

9. Lots should be planned to face desirable views, such as parks, school-grounds, and the like. Conversely, undesirable views should be blotted out by judicious planting.

10. Tree growth on the site should be preserved, but not at the expense of the proper development of the neighborhood as a whole, or if the preservation introduces traffic hazards.

These recommendations were made by George E. Lommel, Professor of Topographical Engineering, Purdue University, at a recent Purdue Road School meeting.

Blade-Mixed Surfacing



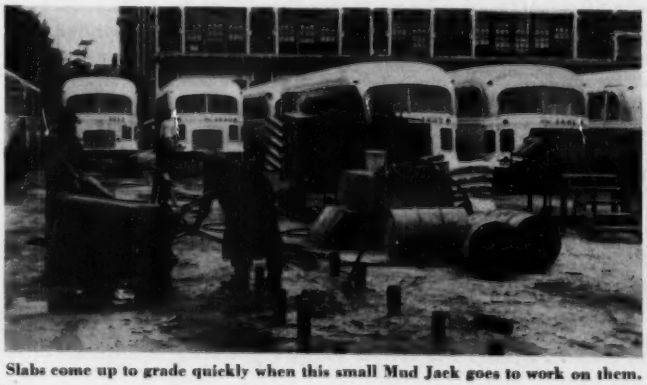
In many areas a blade-mixed oil-mat surfacing has worked very well, particularly where the subbase is strong. Here is an oil-mat being mixed by an Adams motor grader, for a county-project, street-surfacing job in Cologne, Minn.

Settlement Checked

THE New Orleans Public Service Department discovered a defective condition existing in its bus-parking area. A weak subsoil was the problem. Buses, both parked and warming up, caused settlement and deterioration.

To correct the situation, the city built up the subsoil foundation by the use of a Koehring Model 10 Mud Jack that forced a slurry under the slabs. In this case, asphalt was added to give the mix a watertight seal.

Because a limited working area is required for this type of restorative work, buses remained stored in the area while the work progressed.



Slabs come up to grade quickly when this small Mud Jack goes to work on them.

EVEN IN ROUGH, TOUGH SERVICE

Maintenance costs come down when bearings are protected by TEXACO MARFAK

When you use *Texaco Marfak*, your bearings get real protection, and — *the protection lasts!* This tough, tenacious lubricant *stays in the bearings* in spite of heavy loads, the pounding jolts of off-highway service, or puddle splash. *Texaco Marfak* wards off both wear and rust . . . assures longer parts life . . . lower maintenance costs.

You can also assure similar long-lasting protection for wheel bearings by using *Texaco Marfak Heavy Duty*. It seals out dirt and moisture . . . seals itself *in* the bearings and stays *off* the brakes. You thus get greater operating safety as well as greater protection against wear and rust. Lower maintenance costs are assured. No seasonal change is necessary.

TWO MORE ECONOMIES

Engines — heavy-duty gasoline or Diesel — run better and more economically when lubricated with *Texaco Ursa Oil X★★*. Its fully detergent-dispersive properties keep engines clean . . . keep maintenance costs and fuel consumption low.

Lower maintenance costs for crawler track mechanisms are yours when you use *Texaco Track Roll Lubricant*. It's especially designed for this strenuous service — protects bearings by forming an effective seal against dirt and moisture.

Adopt Texaco's Simplified Lubrication Plan and gain cost-saving efficiency. A Texaco Lubrication Engineer will gladly tell you all about it. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

Get What You Want—No Charge!

Please check over the list of interesting free catalogs on this and following pages. To obtain the literature you want, write directly to the manufacturers at the addresses given. If you prefer, you may circle the identifying numbers on this coupon and mail to THE AMERICAN CITY, *470 Fourth Ave., New York 16, N. Y., and we will see that catalogs are sent to you without expense or obligation.*

4/51

300	301	302	303	304	305	306	307	308	309	310	311	312	313	314
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372	373	374	375	376	377	378	379	380	381					

Name ..... **Position** .....

Address .....

Prestressed Concrete Steel-Cylinder Pipe

300 Price Brothers Co., 1932 E. Monument Ave., P. O. Box 825, Dayton 1, Ohio, has prepared a folder describing its prestressed concrete steel-cylinder pipe for which sheet steel, high tensile steel wire, and concrete are used in its manufacture. The firm claims that this combination produces water-pressure pipe that gives the longest trouble-free service at the lowest cost. Write for your copy of the pamphlet or for consultation with the company's engineers on your pipeline design and laying problems.

These Wells Provide Water at Low Cost

301 Caisson Wells, Inc., ground-water engineers and contractors of 33 W. 42nd St., New York 18, N. Y., construct wells which yield large capacities of low-cost water. Well fields 10 to 150 feet deep are tapped economically and the wells require practically no maintenance. Write to the concern for full information.

Water Analysis

302 A new 12-page catalog No. 600-10, illustrating and describing its colorimetric comparator line for precise pH control and water tests has been published by Hellige, Inc., 3718 Northern Blvd., Long Island City 1, N. Y. The line ranges from inexpensive Simplex testers to versatile pocket and standard comparators and the Aqua tester. The Hellige Turbidimeter, described in Catalog *No.* 8000-*A*, measures turbidity, and determines sulfate. All models are equipped with color plates or color discs. They are employed in analyses of water, sewage and industrial waste.

Self-Propelled Concrete Saw

303 The new self-propelled Concut concrete saw features finger-tip control and lever lock providing lower blade costs. Municipalities can employ this equipment device for their concrete and asphalt sawing jobs. For further information, write to Concrete Sawing Equipment, Inc., 15 N. Oakland Ave., Pasadena 1, Calif., asking for *Bulletin* 12.

Reflectorized Signals For Traffic Safety

304 Reflectorized signals that defy heavy traffic and inclement weather are made by the Prismo Safety Corp., Huntingdon, Pa. The firm produces safety marking devices and traffic lifelines that are easier to apply and more economical to maintain. Wear and too-frequent repaintings are minimized by the combination of a hard-sealing plastic binder and crystal, clear, round Prismo Spheres.

Pipe-Threading Machine

305 The Toledo No. 999 2-inch power pipe machine threads 2-inch pipe in 22 seconds and cuts off 2-inch pipe in 10 seconds. Compact, portable, and efficient, it can be employed in your shop, plant, or on the job. For a copy of catalog describing this equipment, write to The Toledo Pipe Threading Machine Co., 1445 Summit St., Toledo, Ohio, or the New York office at 165 Broadway, Room 1310.

For Water Treatment

306 The Solvay Sales Division of the Allied Chemical and Dye Corp., 40 Rector St., New York 6, N. Y., will send on request its free technical literature: Bulletin No. 7—*Liquid Chlorine;* Bulletin No. 8— *Alkalies and Chlorine in the Treatment of Municipal and Industrial Water,* and Bulletin No. 1—*Water Analysis.* The company's products include soda ash for water softening, and liquid chlorine for water purification.

New Tractor Tool For Street Salvage

307 The Grid Roller is the Hyster Co.'s newest tractor tool for bituminous street salvage. It is used with Caterpillar motor graders and Caterpillar DW 10 and track-type tractors. Among the 29 Hyster tractor tools are winches, yarders, donkeys, cranes, logging arches and sulkies, and Hystaway, the 5-in-1 tool that includes dragline, clamshell, crane, shovel and backhoe. This equipment saves money for owners in construction, and street work. Further information may be obtained from the Hyster Co. at 2902-61 N. E. Clackamas, Portland 8, Ore., or at 1802-61 N. Adams St., Peoria 1, Ill.

Air Compressors

308 Lower first cost and upkeep are assured by the Smith air compressor Model 105-P, according to the manufacturer, Gordon Smith & Co., Inc., 425 College St., Bowling Green, Ky. The machine delivers 105 cubic feet per minute, combines heavy duty with light weight, and is easily portable. Full details on this and the new Smith 70P air compressor will be furnished by the firm.

"You Can Beat the A-Bomb!"

309 With an encouraging title, "You Can Beat the A-Bomb," the McGraw-Hill Book Co.'s Text-Film Dept., 330 W. 42nd St., New York 18, N. Y., issues a 20-minute, 16 mm sound motion picture for civil defense. The film gives specific instructions on what to do about defeating the destruction of the atomic bomb.

Sewer-Cleaning Machine Is Self Propelled

310 The Sewer Scooter is a self-propelled sewer-cleaning machine. It does all work from street level and reduces cleaning time by 75 to 80%. This machine is employed for removing sand, gravel, rocks, bricks, mud, grease, broken rods, and metal. For full details on hydraulic, self-propelling sewer cleaning equipment, write to J. C. Fitzgerald, P. O. Box 289, Coral Gables 34, Fla.

More Traction, Action With This Grader

311 More traction and more action are the significant features of the M-B 501 grader for moving earth. It has 18:00 by 24 earth-mover tires that spread out over 612 square inches. The manufacturer, Meili-Blumberg Corp., 1635 Wisconsin St., New Holstein, Wis., claims that the large tires permit the machine to roll over irregularities without affecting blade.

Identification Necklaces

312 To safeguard children of New York City in case of an emergency, the Board of Education plans to issue identification necklaces to the students. These Bead Chain necklaces, used by the Armed Forces, are made by The Bead Chain Mfg. Co., 24 Mountain Grove St., Bridgeport, Conn. The firm reports that its product is flexible so that it cannot kink, attractive, smooth and comfortable.

Meter Repairs and Testing

313 A new water meter maintenance handbook, containing illustrated, step-by-step instructions for the repair and testing of Trident split case meters, has just been published by the Neptune Meter Co., 50 W. 50th St., New York 20, N. Y. Similar in format and general content to Neptune's Frost-Proof Meter Repair Manual, the new 16-page booklet also contains complete instructions for setting up a meter repair shop, including photographs and floor plans of typical meter shops, a list of required tools and equipment, and suggested meter record forms.

Traffic Signals

314 Lightweight, versatility, and efficiency are the values claimed for Autoflow traffic signals made by Southern Signals, Inc., 222 Beach St., Box 1303, Shreveport, La. Among the features are sectional construction without tie rods, interchangeable common parts and sections, and adjustable lamp focusing.

(Please Turn to Page 25 for More Literature)

HANDY SPREADER

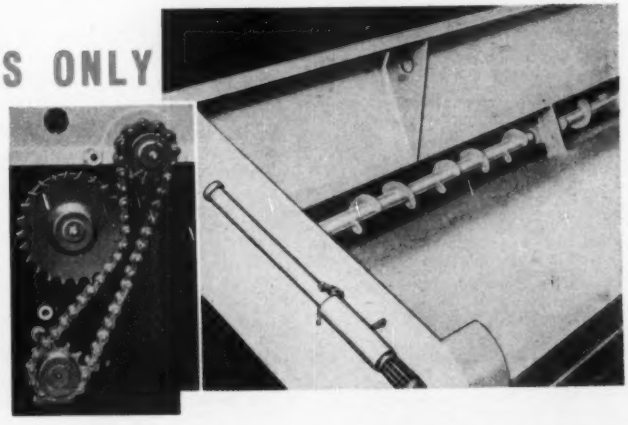
AVAILABLE IN 5 MODELS . . UP TO 12 FEET IN WIDTH

FLEXIBLE KEYBOARD...
of tempered spring-steel permits obstacles in material to drop through without clogging or marring spread pattern.

- NO SHIFTING OF GEARS
fully automatic, free-wheeling gear box
- INSTANTANEOUS SHUT-OFF
a one-lever operation
- POWDER FINE CARPET SPREAD TO A 3-INCH DEPTH
controlled by Micrometer Depth Adjustment
- NO CLOGGING
oversize particles work through Flexible Keyboard without emptying hopper
- SPREAD HEAVY ON ONE SIDE . . . LIGHT ON THE OTHER
utilize Taper Attachment for this effect
- TRUCK HITCHES TO SPREADER FROM ANY ANGLE
positive Locking Automatic Hitch

AUTOMATIC AGITATOR WORKS ONLY WHEN IT IS NEEDED

Agitator driven from feed roll turns automatically in same direction as roll whether spreading forward or reverse, and assumes neutral position without shifting gears when keyboard is closed. Inset shows outer agitator drive mechanism which is completely encased when assembled.



GOOD ROADS MACHINERY CORP. MINERVA, OHIO

Which Catalogs Interest You?

Write directly to the manufacturers, or use the coupon page 23

These Spark Plugs Pack Safety With Power

315 When you use BG spark plugs in trucks and other spark-induced engines, you get the utmost in reliability and great safety from fire hazard. The plugs have demonstrated their usefulness in motors supplying power to water and sewage plants and systems, and to all types of municipal vehicles. For further information, write to The B. G. Corp., 136 W. 52nd St., New York 19, N. Y.

Tar and Asphalt Kettle For Repairing Streets

316 According to Littleford Bros., Inc., 500 E. Pearl St., Cincinnati 2, Ohio, its Model No. 84-HD tar and asphalt kettle for repairing streets is the fastest and safest machine ever designed. Its patented features are the double-heat circulation system which utilizes entire heat output of the burner, and the screened reservoir which keeps cold material from cooling off the already melted material. This 84-HD is available with a hand spray or motor spray attachment which makes it a maintenance unit. Complete details will be sent by the company.

Street Sweeper Wire

317 Roadmaster street sweeper wire, manufactured by the Johnson Steel & Wire Co., Inc., Worcester 1, Mass., has uniform temper and high scleroscope rating. It is processed for high fatigue against breakage and is long wearing. The gutter broom wire is cut and delivered in 100 and 200-pound boxes. For further information, write to the company.

Parking Meters Control Traffic

318 The Mark-Time manual Hurricane parking meter is of simple, rugged construction, enabling it to withstand constant usage and inclement weather. M. H. Rhodes, Inc., Hartford, Conn., will provide full information about its product.

For Pipe Cleaning Problems

319 If you're confronted with pipe-cleaning problems, contact W. H. Stewart, Inc., P. O. Box 767, Syracuse, N. Y., manufacturer of a complete line of sewer-cleaning equipment. Among its products are steel sectional rods and tools, guard-cage collapsible bucket, windlass, spear heads, ball roller heads. The Leader No. 1 new style stewer and conduit rod is selected hardwood with malleable iron couplings. Full details will be furnished by the company.

Fire-Hose Dryer

320 Circul-Air is a patented, electrically-operated and air-conditioned fire hose dryer. Its method is rapid, simple and economical. For illustrated pamphlet, write to the Circul-Air Corp., 575 E. Milwaukee St., Detroit 2, Mich.

Payloader Proves Year 'Round Tool

321 Versatile describes the personality of the Model HM 4-wheel drive Hough Payloader. It serves as a shovel, bulldozer or a crane in any season, and has the power, traction and flotation to work all kinds of ground. The machine has a 1½-cubic yard tractor shovel with large pneumatic tires, four-wheel drive, and four speeds in each direction. The HM catalog on this model and other Payloaders will be sent on request by the Frank G. Hough Co., 710 Sunnyside Ave., Libertyville, Ill.

Parking Problems?

322 Mi-Co Meters, 231 Court St., Covington, Ky., Division of The Michaels Art Bronze Co., Inc., reports that many municipalities praise the dependable service and endurance of its parking meters. Full details on these machines, which serve ten or more years, will be sent by the company.

Emergency Pipe Clamp Stops Leaks

323 Emergency pipe clamp is manufactured by the M. B. Skinner Co., South Bend 21, Ind. Officials faced with the present critical shortage of pipe, will find that these clamps will help to repair corrosion leaks and splits in services and mains for all sizes of steel and cast-iron pipe from ½ inch to 12 inches.

Metal Post Straightener

324 The Porter hydraulic metal post straightener is used by states, cities, counties, and towns for straightening parking-meter posts, highway signs, and metal fence posts. It is powered by a 5-ton hydraulic jack with the necessary attachments. This device is fully portable and weighs 30½ pounds. Full details will be supplied by H. K. Porter, Inc., Somerville 43, Mass.

Handy Sand Spreader

325 Swenson Spreader & Mfg. Co., Lindenwood, Ill., issues a sidewalk spreader which quickly covers icy walks and drives with sand, ashes, cinders or salt. It is cluch equipped with a chain drive from wheel to spreader feed roll. The unit can be pulled back of tractor when plowing snow or by any truck or passenger car for sanding streets or parking lots.

Automatic Pump Controls To Maintain Water Levels

326 Autocon Tanktrols, with twin-bellows design, are pressure-operated pump controls that automatically maintain water levels in elevated tanks. The manufacturer, the Automatic Control Co., 1015 University Ave., St. Paul 4, Minn., claims its product provides pinpoint accuracy, greater sensitivity, maximum protection, and greater savings. For Bulletin No. 1100, write to the company.

Waste Receptacles

327 Of all-welded construction are Bennett Bilt waste receptacles which have non-rusting stainless steel feet. For illustrated catalog on these sanitary and economical waste receptacles, write to The Bennett Mfg. Co., Alden, N. Y.

Effective Lighting

328 Fence and yard lighting for defense plants will be simplified by using Joslyn luminaires mounted on 2-way adjustable brackets, or on standard pipe brackets. The enclosed moisture-proof, dust-tight luminaires, or 18-8 stainless steel open reflectors require a minimum of maintenance, and provide effective light control. For catalogs describing street and defense-plant lighting, write to the Joslyn Mfg. and Supply Co., 20 N. Wacker Drive, Chicago 6, Ill.

Convertible Parking Meters

329 The convertible Model G Park-O-Meter can be converted from single coin to multiple coin operation and from sealed coin-box to automatic coin dumping collection. It has a tamper-proof cash register, 50-yard visibility, and a snap-off precision-built timer. Full details on this system of modernizing your parking will be sent by the Magee-Hale Park-O-Meter Co., Commerce Exchange Bldg., Oklahoma City 2, Okla.

Purify Sewage Digester Gas For Power Production

330 The Connelly iron sponge takes corrosive sulphides from sewage digester gas, and thus eliminates risk of pitting and corrosion damage in engines and other equipment. For full details on this sponge, which protects equipment from sulphur damage and is employed in the sewage gas field, write to Connelly, Inc., 3154 S. California Ave., Chicago 8, Ill.

Reflective Glass Beads For Night Traffic

331 Flex-O-Lite reflective glass beads, a product of the Flex-O-Lite Mfg. Corp., are available in a variety of sizes and meet specific standards for top application to beaded traffic lines and for admixture to traffic paint. They are clearer by day and brighter by night. The Flex-O-Lite traffic line bead dispenser is now available for installation on Kelly-Creswell stripers. For free literature, write to the Flex-O-Lite Mfg. Corp., 8301 Flex-O-Lite Drive, P. O. Box 3066, St. Louis 23, Mo.

Operator's Handbook In Comic Book Style

332 A four-color operator's handbook printed in comic-book style and prepared for heavy-equipment operators is being distributed by the Caterpillar Tractor Co., Peoria 8, Ill., to its dealers and customers. The 32-page book has information on the operation of bulldozers, scrapers, rippers, and cable controls, as well as material on high-speed hauling, and loading. It is designed to make the operation of Caterpillar earth-moving equipment easy to understand, and shows techniques in earth-moving operation.

Official Badges

333 Badges for police, fire and other city, county, and state officials are manufactured by C. G. Braxmar Co., Inc., 216 E. 45th St., New York 17, N. Y. Standard badges have been made by the firm since 1879.

Rubber Paint Used For Swimming Pools

334 Beauty and economical maintenance are claimed for Hydroflex rubber-base finish by the Phelan-Faust Paint Mfg. Co., St. Louis 11, Mo. This rubber paint for swimming pools features elasticity and durability, retains its color, and is easy to clean. A folder showing color samples and full information is available from the concern.

Septic Tank Cleaner Has Many Other Uses

335 The new Gorman-Rupp Odorless sanitary cleaner eliminates unsanitary and unhealthy conditions for septic tank cleaning. It banishes open tanks, diaphragm hand pumps, and shovels. The O. S. C. unit also transports water for emergency fire fighting, sprinkling, and dewatering. The company's new Midget 1½-inch pump is fast, self-priming, and efficient for general use. For full details on this equipment, write to The Gorman-Rupp Co., 343 N. Bowman St., Mansfield, Ohio, asking for *Bulletin 7-St-11*.

Wire and Cable At Low Cost

336 The Coleman Cable and Wire Corp., 4515 W. Addison St., Chicago 41, Ill., reports that huge purchases from Government stocks enables it to offer low prices to municipalities on its cable which can be used for fire alarm, traffic control, and street lighting. Quotation on your requirements is offered by the firm.

Water Conditioning Equipment

337 Bulletin No. 60-C, issued by Infilco, Inc., 325 W. 25th St., Chicago 16, Ill., describes the company's water conditioning and waste treatment equipment. According to Infilco, its products perform multiple tasks in space-saving dimensions as well as saving valuable chemicals. The equipment is easy to operate and provides the answer to small municipalities whose water plant budgets cannot afford highly skilled full-time operators. Write for your copy of the bulletin.

(See Page 26 for More Bulletins)

Obtain this Literature Free of Charge!

Write directly to the manufacturers, or use the coupon page 23

Generators, Chain Saws, Pumps for Any Emergency

338 Carryable pumps, generators, and chain saws for any emergency are manufactured by the Homelite Corp., 104 Riverdale Ave., Port Chester, N. Y. These gasoline-engine-driven units, which are mobile and easily carried by one man, repair damage and restore safety quickly. Among the uses are emergency lighting, flooded buildings or fighting fires, and for cleaning up damage after disaster strikes. Full details will be furnished by Homelite.

Bituminous Mix Plant Requires One Man

339 A versatile, fast-batching bituminous mixer that fits any production problem is the Kwik-Mix in 10 and 14 cubic foot sizes. This one-man bituminous mix plant has uniform oil distribution, accurate temperature control, and assures even-texture mix. A catalog describing this machine will be sent by the Kwik-Mix Co., Port Washington, Wis., a subsidiary of the Koehring Co., Milwaukee 16, Wis.

Safety Line Marker

340 The new 1951 City Special safety line paint marker is used for streets, crosswalks, parking lines, industrial plants, and safety zones. Manufactured by the G. N. Spiess Equipment Co., 6823 W. Aetna Court, Milwaukee 13, Wis., the machine weighs 150 pounds ,has a one-piece steel tank, and paints ribbon lines from 2 to 6 inches on any surface. The marker is available with 2, 3, 7, 10, and 12-gallon tanks. Write for descriptive literature.

Bucket Loader Has Hydraulic Trimmer

341 The Model 543 Barber-Greene bucket loader, manufactured by the Barber-Greene Co., Aurora, Ill., has the new hydraulically controlled trimmer-conveyor which permits operator to distribute maximum load into highest trucks, long trailers, railroad cars with fingertip control. It has a 15-mph road speed. Bulletin on this machine will be sent by the firm.

Tractor With 20 Tools

342 The 5-HP Gravely tractor is employed for city lawn and maintenance problems. It features power reverse and all-gear drive, and has 20 tools for varying needs. The Gravely Motor Plow & Cultivator Co., Box 373, Dunbar, W. Va., on request will send you a copy of *Power vs. Drudgery*.

Two-Way Radio Station Equipment

343 Four new bulletins on RCA 2-way radio station equipment are available from RCA Engrg. Products, Camden, N. J., Dept. O-102. They contain descriptions of a complete line of equipment, transmitters, receivers, control consoles, and accessories for the two-way radio station system. The booklets include *3,000-watt State Police Equipment* (42-45 *mc*); *A.C. Carfone*, 15-*watt Portable* (152-174 *mc*); *Fleetfone Equipment* (30-50 *mc*), and *Carfone Station Equipment* (152-174 *mc*).

Safety Lantern

344 The Night Watch, a safety lantern manufactured by the R. E. Dietz Co., 225 Wilkinson St., Syracuse, N. Y., projects a pencil beam that is visible from all angles and at near and far distances. Its globe is molded with optically perfect prisms, designed to concentrate the light's rays into a parallel, vertical beam of greatest possible intensity. Night Watch is recommended for use by municipalities, special districts, utilities, contractors, shipping, and industry.

Hinged Street Lighting

345 Hinged lighting standards defeat the high cost of maintenance, according to the Revere Electric Mfg. Co., 6015 Broadway, Chicago 40, Ill., manufacturer of street lighting equipment. Lamps and reflectors are cleaned and serviced from the ground, eliminating the need for elevator equipment. Other new Revere products are Whiteway Pylon-Lites for business districts, boulevards, and residential areas, and single- and double-arm one-piece steel standards.

House Numbers

346 Available in weatherproof aluminum and brass are the new Premax deluxe and Hycaste house numbers manufactured by Premax Products, Division of the Chisholm-Ryder Co., Inc., 5146 Highland Ave., Niagara Falls, N. Y. According to the manufacturer, this modern manner of numbering insures easy access to any part of the city, and eliminates duplication and error. Write for bulletin and sample number.

Leaf Loader

347 Foresighted public works officials begin thinking now of the best method of removing leaves. The Leaf Loader Division of the American Structural Steel & Tank Co., 21050 W. 8 Mile Road, Detroit 19, Mich., on request will send a leaflet describing its American vacuum leaf loader for leaf and clean-up problems.

Water Fluoridation

348 Wallace & Tiernan Co., Inc., chlorine and chemical control equipment firm, Box 178, Newark 1, N. J., has a full line of dry chemical and solution feeders which have been tested and proved, and are suitable for fluoridation. The company's engineers recognize that no two fluoridation problems are alike, and give data on what the process can and cannot accomplish.

Condenser Circulators

349 Condenser circulators, in standard sizes to 100,000 gpm and in special sizes to 200,000 gpm, are illustrated and described in a new catalog No. G-1050, *Circulators by Economy*, recently issued by Economy Pumps, Inc., Division of the Hamilton-Thomas Corp., Hamilton, Ohio. The pumps, vertical, and mixed-flow units of large capacity and low head, are designed for power station service. Write for your copy.

Water Meters

350 Accurate liquid meters for all sizes and types of service are produced by the Worthington-Gamon Meter Division of the Worthington Pump and Machinery Corp., 296 South St., Newark 5, N. J.

Sand Spreaders

351 The Baughman sand spreader is constructed of high tensile alloy steel. Patented pre-heaters keep material flowing freely and prevent breaking of moving parts in extremely cold weather. Safety baffle plates give absolute spread control and are adjustable to cover width from 8 to 30 feet. Full details will be sent by the Baughman Mfg. Co., Inc., 631 Shipman Road, Jerseyville, Ill.

Melting Furnace For Water Works

352 The Insto-Gas plumbers' furnace is available in the floor-type style for convenient operation in ditches and places difficult to reach. It features instant lighting and safety; has a melting speed of 40 pounds of lead in six minutes, and it can be employed for melting either metal or compounds. Water-works maintenance departments also use Insto-Gas torches for melting out bell joints. For further information, write to the Insto-Gas Corp., Detroit 7, Mich.

Lawn Mower Sharpener Cuts Maintenance Costs

353 The Modern lawn mower sharpener cuts maintenance costs. Priced at $241.50 (less motor), is sharpens all reel-type mowers from 5-inch edgers to 36-inch power mowers. It is constructed of steel and is small, compact, and easy to operate. This device sharpens wood chisels, joiner knives, and planer blades without extra attachments. One-third-hp G-E 60-cycle motors are available for the sharpener, priced at $21.50 extra. Send for free bulletin No. 25B from the Modern Mfg. Co., 160 N. Fair Oaks Ave., Pasadena 1, Calif.

Large Capacity, Concrete Water Supply Pipe

354 The Lock Joint Pipe Co., P. O. Box 269, East Orange, N. J., makes lock joint concrete pressure pipe which provides freedom from rupture or blow-out, corrosion or deterioration, maintenance and repairs, and loss of carrying capacity. Water-works officials may find the answer to their needs in the firm's products.

Powerful Pipe-Line Locators

355 Wilkinson Products Co., 3987 Chevy Chase Drive, Pasadena 3, Calif., calls its line locator the "electric sleuth," for the device locates every part of your underground pipe system and shows the depth of lines. Lightweight, compact, the precision locator spots mains, services, stubs, valves, boxes, and couplings.

High-Rate Water Treatment Unit

356 The Dorr Co., of Stamford, Conn., has just published *Bulletin No.* 9041 which describes its Dorrco Hydro-Treater in 32 pages of data, photographs and drawings in color. Write for your free copy.

Water System Valves

357 Iowa mechanical joint cutting-in valves and sleeves simplify hydrant inspection and maintenance. This fast, simple, and economical method of cutting valves into existing water lines is described in literature issued by the Iowa Valve Co., 201-299 N. Talman Ave., Chicago 80, Ill. Completely furnished with joint accessories, the valves need only a ratchet wrench, eliminating the necessity for lead, jute, or caulking.

Emergency Electric Power For Civilian Defense Corps

358 Standby electric power for civilian defense corps is supplied by Onan electric plants. Manufactured by D. W. Onan & Sons, Inc., 7640 University Ave., Minneapolis 14, Minn., Onan self-contained units are available for portable, mobile or stationary use. They can be employed for police and fire radio, emergency feeding centers, air raid shelters, sewer and water systems, and floodlighting disaster areas. Write for the folder which describes this product.

Street-Marking Signs

359 Signs for traffic control, highway marking, and street name assemblies are manufactured by the Miro-Flex Co., Inc., 1824 E. Second St., Wichita, Kans. The signs are deeply and uniformly embossed on zinc-coated, bonderized steel. They are also available with glass or lucite buttons. Write for catalog illustrating these products.

Investment Bonds

360 Halsey, Stuart & Co., Inc., 123 S. LaSalle St., Chicago 90, Ill., and 35 Wall St., New York 5, N. Y., underwrites and distributes bonds for investment. It offers service for investment requirements of pension, insurance, and endowment funds. The firm will send without charge its latest offering list.

(Please Turn to Page 28 for More Literature)

these are the famous

BG

UNSHIELDED, AND
LOW-FIRE-HAZARD
SPARK PLUGS

Offering Reliable Performance and Operating Economy for YOUR Spark Ignited Gas Engines . . .

Preferred by USERS of these and other great spark-ignited engines . . . .

Cooper-Bessemer
Ingersoll-Rand
WORTHINGTON

BG Spark Plugs have demonstrated their greater reliability in thousands of engine applications throughout the public utility field . . . not alone in municipal vehicles and construction equipment, but in water supply systems and sewage plants. The BG method of shielding to ground reduces the serious hazard to life and equipment by eliminating Spark Plug flash-over.

Low-fire-hazard is only one of many advantages inherent in BG Spark Plugs. BG Spark Plugs assure maximum performance over a longer life and uninterrupted, trouble-free service. Their basic soundness, plus their reconditioning feature, combine to bring you the lowest cost in operation per spark plug hour.

GET THE FACTS

The BG Industrial Catalog illustrates and describes THE Spark Plug best suited to your needs. Get your copy and name of nearby distributor.

Write today

The B. G. Corporation
136 W. 52nd St., New York 19, N. Y.

Kindly send me name of your nearest distributor together with information on Spark Plugs best suited to . . .

Engine make and type _____

Name _____

Address _____

City _____ Zone ____ State _____

THE B. G. CORPORATION, 136 West 52nd St., New York 19, N. Y.

GET ORDERS IN NOW
for low-cost Bantam

Saves on garbage disposal

Many cities report substantial savings in disposal costs with Bantam sanitary land-fill method. Mobile Bantam hoe or dragline opens suitable trench in a few hours . . . returns as needed to spread and compact fill over refuse.

Speeds sewer repairs

Truck-mounted Bantam easily handles 3 to 4 sewer or water line repairs per day, including breaking 20' to 30' lengths of pavement and digging down 10' to 12' to make the repair. Sewer Supts. report savings up to 75% over hand methods.

Cuts cost of materials handling

Versatile Bantam goes anywhere, anytime at speeds to 35 M.P.H. . . . keeps busy stock-piling sand, cinders, aggregate . . . loads trucks, hoppers, etc. . . . pours concrete . . . handles steel, pipe, slabs, etc. . . . has 6 fast-change attachments for year 'round use.

Clip... Mail today!

SB-MU-2

SCHIELD BANTAM CO., 234 Park St., Waverly, Iowa

Send details on truck-mounted Bantam

☐ Shovel ($6195)* ☐ Pile Driver ($6110)* ☐ Dragline ($5940)*

☐ Hoe ($6040)* ☐ Crane ($5520)* ☐ Clamshell ($6080)*

Name_____ Title_____

Company_____

Address_____

City_____ State_____

*Less truck, F.O.B. Waverly, Iowa. Prices subject to change without notice.

SCHIELD BANTAM

Costs less . . . goes anywhere fast

GETS MORE JOBS DONE

Catalogs for You

Write directly to the manufacturers, or use coupon on page 23

Plastic Rock For Sidewalk Surfacing

361 The modern method of renewing city sidewalks is by the use of Plastic Rock processes which make an enduring job, waterproof where necessary. *Report No.* 220-36 is issued by United Laboratories, Inc., 16820 Euclid Ave., Cleveland 12, Ohio. It describes the Plastic Rock method which is easy to apply, unaffected by heat or cold, slip-proof, wet or dry, and which can be applied without interruption of traffic. Plastic Rock is packed complete in sealed barrels.

New Diesel Engines

362 An 18-page bulletin, S-500-B52A on a new line of DR diesel engines has been published by the Worthington Pump and Machinery Corp., Harrison, N. J. It describes and illustrates the four-cycle, direct injection, totally enclosed engines with photographs, cutaway line drawings and specifications. Also described are the supercharged SOR engine, the DRGO dual-fuel diesel, and the SDRGO supercharged dual-fuel diesel. Write for your copy of the bulletin.

Faster Water-Main Work With Precalked Pipe

363 Unskilled labor is able to make joints for laying pipe when McWane precalked cast iron pipes are employed. All joint materials are placed in the bell at the foundry of the McWane Cast Iron Pipe Co., Birmingham 2, Ala. A cost-saving combination is assured with McWane precalked joints with 18-foot lengths of McWane pipe, for there is no jute to tamp, runners to make, lead to melt, or no joint to pour. The pipe is available in sizes of 2 through 12 inches.

Two-Way Aerial Maps

364 Two-way aerial maps, one for planning and one for engineering, are made by Fairchild Aerial Surveys, Inc., photogrammetric engineers, 224 E. 11th St., Los Angeles 15, Calif., or 21-21 41st Ave., Long Island City, N. Y. This method enables city engineers to make decisions without sending a survey party into the field. This plan provides a precise photomap and accurate contour maps. Write for free copy of the booklet, *Focusing on Facts*, which describes Fairchild aerial survey methods.

Glass Covers For Sewage Treatment Plants

365 New revised engineers' service sheets are available from Lord & Burnham, Division of the Burnham Corp. of Irvington, N. Y., and Des Plaines, Ill. The company supplies glass covers for sewage treatment plants, sludge beds, sprinkling filters, tanks, or wherever they are needed. The service sheets, furnished on request, contain details, specifications and recommendations to suit individual job requirements.

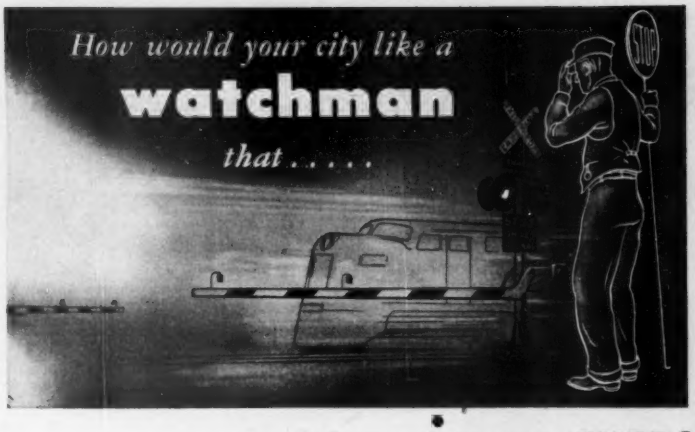
Diesel Engines

366 Superior and Atlas diesel engines using the 4-cycle principle and built in sizes up to 1,500 hp are available from The National Supply Co., Engine Division, Springfield, Ohio. Bulletins on these engines are available from the firm.

Cast Iron Pipe For Industrial Service

367 The United States Pipe and Foundry Co. of Burlington, N. J., produces cast iron pipe for water, gas, sewerage, and for industrial service. In illustrating the durability of its product, the firm reports that the City of Troy, N. Y., has a cast iron water main in service that was installed more than a century ago.

(See Page 30 for More Bulletins)



. . . can't leave his post, *EVER!*
. . . can't be distracted, *EVER!*
. . . can't relax or be ill, *EVER!*

WESTERN *Model 10* Automatic Crossing Gates

give you automatic round-the-clock dependable protection

Western Model 10 Automatic Signals completely eliminate the "human equation" in railway crossing protection—are not subject to the limitations of human hearing—or vision—*or vigilance!*

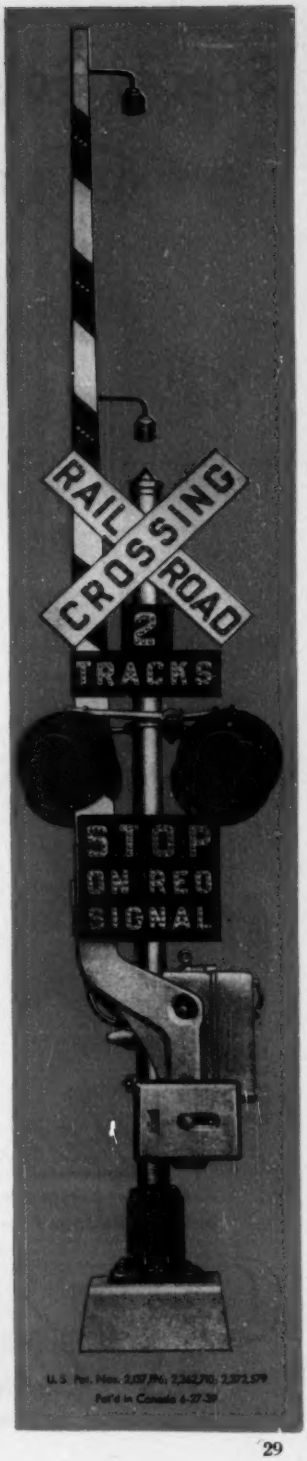
Made by the Company which pioneered in the development of automatic highway crossing protection, the Model 10 Signal has a performance record of more than 14 years—is specified by nearly a hundred railroads—has justly earned its *unequalled* reputation for year-in and year-out DEPENDABILITY.

For YOUR City, get Western Model 10's . . . AND BE SURE: Send for Bulletin 748-AC4 which gives complete information.

Since Model 10's have been installed at thousands of dangerous railroad-highway crossings, not one fatality has EVER occurred as a result of operation failure!

WESTERN *Model 10*
AUTOMATIC GRADE CROSSING SIGNALS
PRODUCT OF
WRRS WESTERN RAILROAD SUPPLY COMPANY
CHICAGO 9, ILLINOIS

LEADING MANUFACTURER OF GRADE CROSSING SAFETY DEVICES—MAKER OF RAILWAY SIGNALING ACCESSORIES



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Pat'd in Canada 6-27-39

Prevent Hammer or Shock

Specify Golden-Anderson

"Cushioned" VALVES

for municipal water works systems

Cushioned Altitude Valve for automatic water level control. Bulletin W-4

Cushioned Relief Valve to remove surge and hammer. Bulletin W-2

Write

for new engineering bulletins designed for you

Cushioned Swing Check Valve for automatic operation with pump. Bulletin W-1

Golden Anderson Valve Specialty Company

2093 KEENAN BUILDING • PITTSBURGH 22, PA.

More Literature

Write directly to the manufacturers, or use coupon on page 23

Tubular Steel Lighting Poles

368 National seamless tubular steel lighting poles have uniform wall strength without longitudinal welds. They are used for parks, boulevards, and on main streets, are easy to erect, and require little maintenance. Manufactured by a subsidiary of United States Steel, the National Tube Co., Frick Bldg., Pittsburgh 19, Pa., the steel poles have a high strength. Write for a copy of *Bulletin No.* 14 which describes the equipment.

Water Waste Detection Device Checks Leakage

369 Simplex water waste detection equipment checks breaks in pipelines and leaking joints. Manufactured by the Simplex Valve and Meter Co., 6789 Upland St., Philadelphia 42, Pa., the portable equipment includes a combination of Simplex pilot rod, manometer and recorder to check water wastes and measurement of flow through pipelines. For a free copy of *Bulletin No.* 50, describing this product, write to Simplex's Dept. 3.

Landfill Garbage Disposal

370 The rubber-tired Tournadozer spreads, compacts, and covers garbage. Operated by one man, the machine, with a 19-mph speed, excavates disposal trenches and spreads truck-dumped garbage. It also can be employed for repairing and maintaining streets, and for plowing snow. Information on the 122-hp Model D Tournadozer or the 180-hp Model C will be sent by R. G. LeTourneau, Inc., Peoria, Ill.

Fire Hydrant Has Ball Thrust Bearings

371 The Darling B-50-B ball-bearing type fire hydrant has an extra-large barrel to deliver water to nozzles with no perceptible pressure loss and a positive mechanically actuated multiport drain mechanism. The Darling Valve and Mfg. Co., Williamsport 10, Pa., on request, will send a copy of *Bulletin No.* 5007 which illustrates and describes this new fire hydrant with ball-thrust bearings and O-ring seals.

For Mowing Lawns

372 The Cooper 27 Imperial roller type mower is powered with Briggs & Stratton motors, new positive reel adjustment, and new all-steel welded deck. This model is available with Riding sulky equipped with low pressure 14 by 400 balloon tires, weeding cutting attachment, and automatic dump grass catcher. For maintaining lawns from 35 to 40 acres, the Cooper Mfg. Co., 454-456 S. First Ave., Marshalltown, Iowa, produces a 65-inch heavy duty mower with Triplex cutting units and riding attachment.

Diesel Wheel Tractor Handles Bigger Loads

373 The new Oliver 88 diesel wheel tractor is easy to start and has a high over-all efficiency due to superior air and fuel mixture. Prolonged piston-head pressure increases lugging ability under heavy loads. The Oliver Corp., which has a complete line of industrial wheel and crawler tractors, claims its machine handles bigger loads at lower fuel cost. For full details, write to the Oliver Corp.'s Industrial Division, 19300 Euclid Ave., Cleveland 17, Ohio.

Valves

374 Globe valves, gate, angle, or check valves are illustrated and explained in detail in a complete catalog prepared by Stockham Valve and Fittings, Birmingham 2, Ala. When writing, ask for Catalog 50-V.

(See Page 34 for More Bulletins)

NOW! A NEW PLAN...*

The only COMMUNITY-WIDE GARBAGE GRINDER PLAN that works!

**THE COMMUNITY BENEFITS WHEN EVERYONE COOPERATES...*

Mr. Arthur Pickett, Deputy County Engineer of Los Angeles County and a national authority, in the January, 1951 issue of the American City Magazine, proposed a sound and unbiased Community Plan for the installation of garbage grinders. We sincerely urge all Public Officials to consider the merits of this plan, as it is designed to meet their most discriminating requirements.

what the workable community-wide plan means to your community!

It is on record with the U. S. Public Health Service (Report No. 15, Vol. 63) that practically every community in the United States has a serious garbage problem. This problem affects the health of the community and is becoming most costly to solve with present garbage removal methods.

The antiquated methods of collecting garbage can be changed for the more practical, sanitary and economical method . . . the garbage grinder method that eliminates garbage at the point of origin . . . right at the kitchen sink in the home, restaurant and public institution.

GREATER HEALTH AND SANITATION

With this new, proven garbage disposing method, every home, public and commercial food-preparing establisment, *the entire community itself*, will be free of the very existence of garbage *forever!*

NO ATTRACTION FOR FLIES, RATS OR VERMIN.

NO OFFENSIVE GARBAGE ODORS.

NO UNSIGHTLY, SPACE-CONSUMING GARBAGE PAILS IN THE ALLEYS, BACKYARDS OR STREETS.

NO GARBAGE COLLECTION, LOWER COSTS

Another important advantage of a Community-wide Garbage Grinder Plan is its saving in labor and equipment. There's no garbage to collect, therefore, the costs in buying and maintaining equipment are drastically reduced to the bare requirements needed to collect rubbish only.

THE COMMUNITY-WIDE PLAN OFFERS 100% COOPERATION

The Public Official is relieved of the grievous and burdensome liability of financing and selecting garbage grinders. In all true analysis, the garbage grinder becomes the private property of the landowner, upon whose shoulders this responsibility would rest.

WE INVITE ALL PUBLIC OFFICIALS TO INVESTIGATE OUR COMMUNITY-WIDE GARBAGE GRINDER PLAN BY WRITING FOR THE COMPLETE PLAN IN DETAIL.

SEND FOR DESCRIPTIVE BOOKLET "COMMUNITY-WIDE GARBAGE-FREE LIVING." No obligation!

Waste King
KITCHEN
PULVERATOR
CONTINUOUS-FEED

GIVEN MANUFACTURING CO., LOS ANGELES, CALIF.

Dept. AC4, Given Manufacturing Co.
1250 Wilshire Blvd.,
Los Angeles 17, Calif.

Please send my complimentary copy of "Community-wide Garbage-free Living." I am interested in the Community-wide Garbage Grinder Plan.

Name_____

Title_____ Dept._____

Address_____

City_____ State_____

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CIVIL DEFENSE COMMUNICATION ADVISORY SERVICE

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A HOW-TO-DO-IT BLUEPRINT for community safety offered as a public service at no cost to you!

HERE is a sound, workable approach to civil defense communications. Here's an *operating plan* that makes efficient use of the 2-way radio systems at your command . . . supplements existing wire line facilities in your area . . . and ties together these vital services in time of emergency:

Trained at Electronics Park, world center of electronics progress, G-E radio communication specialists are prepared to help your community organize the kind of communications network it should have today, tomorrow, every day. The G-E man near you will analyze your area's existing communications, survey its emergency needs and recommend the best, most economical method of setting up a reliable network to do the job—*and all this at no cost to you!*

You can help your community by making use of this service. Practical aid from electronics engineers is as near as your telephone. Call your G-E civil defense communications specialist today for details.

WRITE OR WIRE TODAY FOR THIS *FREE BROCHURE!*

The need is so great—and it costs you nothing. Every civil defense official should have a copy of this G-E communications brochure. Call the G-E man near you for your copy or write: *General Electric Co., Section 1041, Electronics Park, Syracuse, N. Y.*

In Canada, Canadian General Electric Company, Ltd., Toronto

You can put your confidence in—

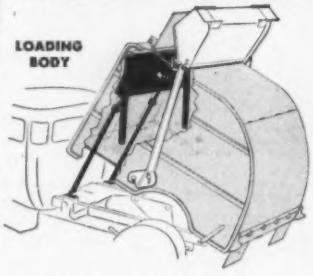
GENERAL ELECTRIC

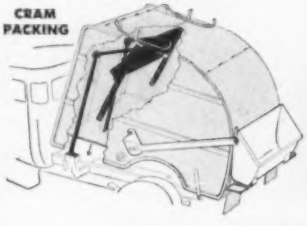
BOTTOM COST, TOP PERFORMANCE with

St.Paul Pax-all
REFUSE LOADER

New Model Pax-all offers these big COST-CUTTING advantages and improvements:

1. CRAM PACKING: New *load retaining* feature insures a *full load* each trip regardless of nature of rubbish.
2. REAR CONTROL: Furnished as alternate to cab control; loading cycle is completed automatically while men continue collecting.
3. SANITARY: All enclosed body has rubber-sealed, watertight tailgate. Hatch opens only during loading, then serves as windshield. Rounded inside body corners assure clean dumping.
4. LOW COST: Pax-all is still the lowest priced compaction-type loader. It is used with low-cost, relatively light weight trucks. Minimum operation and upkeep costs assured because of light weight and having only one hydraulic cylinder and pump to maintain.





For further information please use coupon below

ST.PAUL HYDRAULIC HOIST, 2207 University Ave. S. E., Minneapolis 14, Minn.

Send me literature and complete information on the St.Paul Pax-all.

Name.....

Title.....

Address.....

City, Zone.....

State.....

A brief note about your present method of refuse collection and disposal, size of fleet, replacements contemplated, etc., would enable us to give you more complete information.

Modernize and Economize with Pax-all

Other Catalogs

Write directly to the manufacturers, or use the coupon page 23

Manifold Compound Water Meter Unit

375 The new Rockwell 8-inch manifold compound water meter unit consists of two Pittsburgh-Empire single-register compound meters with four Fig. 115 Nordstrom lubricated plug valves and two 8-inch reducing manifolds. The manufacturer, the Rockwell Mfg. Co., 400 N. Lexington Ave., Pittsburgh 8, Pa., claims this unit measures more accurately on both high- and low-water rates than a single 8-inch compound. It weighs 100 pounds less than the 8-inch and is easier to handle. Write for full information.

Water-Works Catalog

376 Of interest to those in the water-works industry is the new general catalog issued by the B. James Robertson Co., 1726 Beverly Drive, Pasadena 7, Calif. New tools and supplies and parts now available are described and illustrated.

Makes Accurate Measurements Faster

377 Estimating and layout work are accomplished more quickly when you employ Rolatape which measures and records distances as it rolls. Of rugged steel construction, it measures wall to wall, vertical, overhead, and curved surfaces. The Model 200 is priced at $17.50. Full information will be furnished by Rolatape, Inc., Dept. C, 1415 14th St., Santa Monica, Calif.

Kills Weed Roots

378 The Dolge SS weed-killer may be employed wherever no vegetation is desired. It kills plant roots, sterilizes soil, eliminates and saves cost of hours of labor. Another product of The C. B. Dolge Co., Westport, Conn., is the E. W. T. selective weed-killer (2-4-D) which controls the weeds on your seeded areas, kills weeds, but does not injure most turf grasses. Write for literature.

Refuse Loader With Minimum Costs

379 The new model Pax-all refuse loader insures a full load each trip, regardless of the nature of rubbish. Its all-enclosed body has a rubber-sealed, watertight tailgate. Minimum operation and upkeep costs are assured because of its light weight and its having only one hydraulic cylinder and pump. Full details will be supplied by St. Paul Hydraulic Hoist, 2207 University Ave., S. E., Minneapolis 14, Minn.

Drainage Problems?

380 The answer to your drainage problems may be Young and Greenawalt of 7240 S. Yates Ave., Chicago, Ill., who offer engineering and contracting services and all materials. The firm's installation service includes jacking, tunneling, threading, open trench, arch lining, drainage of wet cuts, slide control and ballast pocket drainage. It fabricates the highest grade of corrugated pipe, which is available in plain or asphalt coated, from 8 to 96 inches in length.

No Trenching Needed For This Pipe Installation

381 The Hydrauger earth boring tool provides an easy way to install underground pipe quickly and at low cost. It bores a straight, open hole just over the pipe in sizes from 2 to 14½ inches in diameter. The machine saves in labor and construction and can be employed in highly populated areas and around or under heavily-traveled highways. Three models available are L-2 with 3.2 hp, 10-A, 5.2 hp, and LHH-2 with 3.2 hp. For a copy of Catalog No. 8, write to Hydrauger Corp., Ltd., 681 Market St., San Francisco 5, Calif.

THE FIRST MECHANICAL JOINT TAPPING SLEEVE AND VALVE

ELIMINATES { MELTING, POURING, CAULKING

A new *all* Mechanical Joint Tapping Sleeve and Valve, installed quickly and easily even by untrained workmen using a ratchet wrench. There are no joints to pour and caulk.
Installation can be made in wet trenches in any kind of weather.
The "Stuffing Box" type joints require no cutting or scarfing of rubber gaskets on job. Assemble Sleeve on main—attach the Valve, the installation is complete and the joints are permanently bottle-tight.

32

GATE VALVES
CHECK VALVES
FIRE HYDRANTS
INSERTING VALVES
TAPPING SLEEVES AND VALVES
WATER SERVICE BRASS GOODS

THE A. P. SMITH MFG. CO.
ESTABLISHED 1896
EAST ORANGE, NEW JERSEY

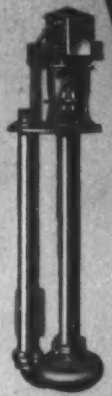
FLOOR STANDS
INDICATOR POSTS
TAPPING MACHINES
INSERTING MACHINES
PIPE CUTTING MACHINES
CORPORATION TAPPING MACHINES

pumping sewage?... LOOK TO ECONOMY!

In severe service, Economy non-clogging pumps installed as long ago as 1911 are still on the job, still giving satisfactory service.

They're built for long life! Construction is heavy and substantial. Rotating parts are rigidly supported to withstand vibration due to the unbalancing of the impeller while passing solids. Impellers, volutes and waterways are of highly developed design, based on long experience in pumping sewage. As a result these Economy pumps represent the ultimate in ability to pass solids, and are highly efficient.

Careful inspection and a complete factory running test assure the hydraulic and mechanical efficiency of every unit.



Sump Pumps
Capacities to 5,000 G.P.M.
Heads to 120 ft.

Vertical
Non-Clog Pumps
Capacities to 20,000 G.P.M.
Heads to 125 ft.

Mixed-Flow
Volute Pumps
Capacities to 50,000 G.P.M.
Heads to 115 ft.

Catalog No. F249 gives full details on vertical non-clogging pumps; Catalog No. E-345 on sump pumps; Catalog No. F-1049 on mixed-flow volute pumps. For your copies, write Dept. AB-4

When it's pumps, think of Economy

Centrifugal, axial and mixed-flow pumps for all applications

Economy Pumps, Inc.

DIVISION OF HAMILTON-THOMAS CORP., HAMILTON, OHIO

Save man hours

with TOLEDO POWER DRIVE for operating sluice gates!

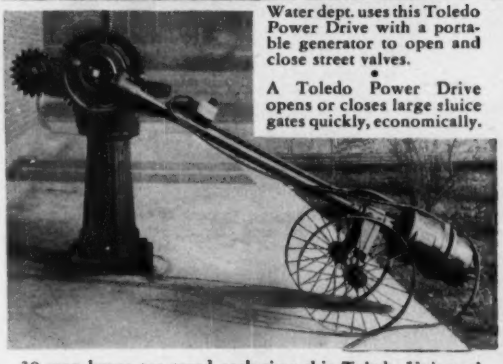
When you need power on the job—to open or close manually operated sluice gates or street valves and similar jobs—you can *save time and labor* with a TOLEDO Universal Power Drive! It's portable . . . use it anywhere . . . weighs only 165 lbs. . . . steel or rubber-tired wheels . . . operates from light socket on 115 volt current. Also, can be furnished with 230 volt motor.

For sluice gates—the driving head is slipped on the valve stem and may be turned for either horizontal or vertical stem valves. ½ H.P. motor is reversible and will either open or close the gate or valve. Motor automatically adjusts speed to load. Driving bushing rotates about 30 R.P.M. under load. Safety device protects against overload. Toledo-built dependability. Send coupon for more details.

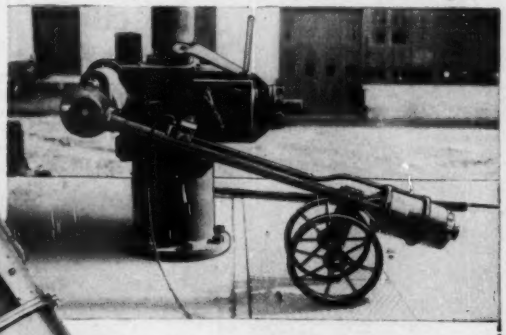
Water dept. uses this Toledo Power Drive with a portable generator to open and close street valves.

•

A Toledo Power Drive opens or closes large sluice gates quickly, economically.



30 man hours are saved each time this Toledo Universal Power Drive opens or closes this big 9 ft. x 12 ft. sluice gate.



Safety Device in driving head of Power Drive can be adjusted for 8 different loads. It will slip when overload is applied.

TOLEDO

***Portable* POWER DRIVES**

PIPE TOOLS and POWER PIPE MACHINES

The Toledo Pipe Threading Machine Co.
Toledo, Ohio

Without obligation, send new bulletin on Toledo Power Drives.

Name.....

Street.....

City.....State.....

O.K.'d BY CHICAGO all ways

CHECKED and DOUBLE CHECKED FOR ALMOST TWO YEARS . . .

No hit or miss or snap judgment dictated Chicago's Council action last November. On the contrary MILLER METER selection (15,000 strong) came, only after nearly 2 years of checking . . . double checking . . . correlating the convincing facts and figures established by the administration's full resources, such as:—

- ☑ FIELD SURVEYS
- ☑ SPECIFICATIONS
- ☑ ENGINEER'S LABORATORY TESTS
- ☑ FINANCE COMMITTEE APPROVAL
- ☑ DIRECTOR OF PURCHASES APPROVAL

What Chicago did (O.K.'d *MILLER METER all ways*) and 860 other cities have done, you and YOUR administration can and should also do. For complete details about our improved '51 model, write us today!

835 NO. WOOD STREET **DUNCAN PARKING METER CORP.** CHICAGO 22, ILL.

. . . fully enclosed pipe gallery

Again it's Roberts Filter!

THE RIO GRANDE DE LOIZA DEVELOPMENT—OUR SEVENTH SERVING THE GREATER SAN JUAN AREA

. . . interior view of control tables

"THE PRIDE OF THE ANTILLES"

Another triumph of progress and engineering skill was marked during the recent opening of the Puerto Rico Aqueduct and Sewer Authority's colorful Rio Grande De Loiza filter plant. Roberts Filter is proud to have taken part in this 30 million gallon per day project—seventh with which we have been identified over a period of 35 years in the historic San Juan area.

in cooperation with

SERGIO CUEVAS
Executive Director of Puerto Rico Aqueduct and Sewer Authority

BUCK, SEIFERT, and JOST
Consulting Engineers
New York

Worth its weight

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

. . . in installation savings

Are you finding it increasingly difficult, in the face of today's economy, to undertake needed water-line construction?

If so, you may find—as other planners do—that Transite* Pressure Pipe can help provide a practical answer to your problem. For this pipe, in addition to its continuing, long-term savings, offers an opportunity for economies in installation *that may go far in helping you contend with rising costs and manpower shortages.*

Transite Pressure Pipe offers a combination of advantages which speed and facilitate water main installations all along the line—from the time the pipe is first received, to final placement of the line in service and restoration of normal street traffic. Not only do pipe laying crews find this modern pipe easy to work with, but its unique features make for a more compact, efficient and economical operation in virtually all the construction phases of water-line extension projects.

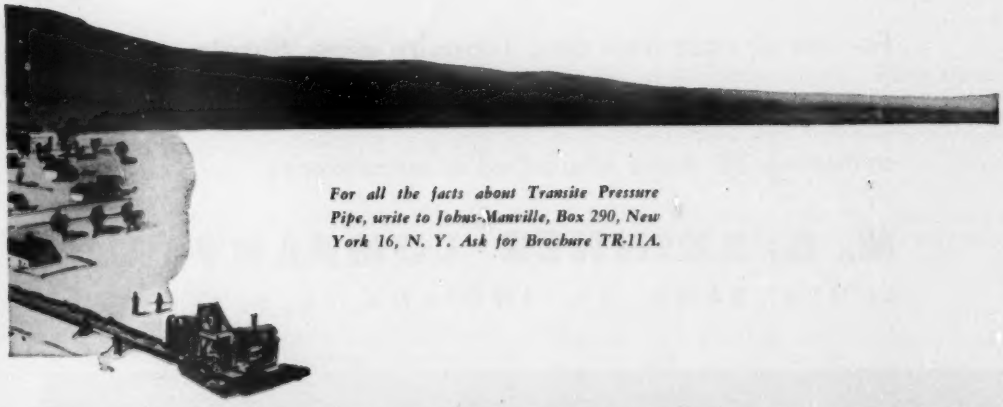
Economies start as soon as a shipment of Transite Pipe is received. Because it is light in weight, unloading and other handling operations are simplified. More footage can be carried per truckload, trucking costs are lowered, and distribution on the job site is faster. And except for the larger diameters of pipe, the sections can be lowered into the trench by hand, or with the aid of rope slings.

Assembly, too, is both rapid and economical. The flexibility of Transite's joints permit the pipe to be laid around wide curves without the need for special fittings. The Simplex Couplings require no calking or hot compounds; they are quickly and easily assembled to provide lastingly tight joints. *And with this pipe you can check for proper assembly immediately after the pipe ends are joined.*

Makes pipe-laying an assembly-line operation

This combined feature of rapid assembly and assurance of joint-tightness as fast as the line is laid, is the key to an important Transite advantage: it means that trench excavation, pipe laying, and backfilling operations can follow in quick succession—often under the supervision of one foreman. It makes pipe-laying virtually an assembly-line operation in which the trench can be closed in a minimum of time. This assures more economical use of excavation and earth handling equipment, reduces the expense and hazards of long stretches of open trench, and helps button-up the job with the least possible expenditure of time, labor and money.

These *initial* savings . . . plus the *long term* economies that have been effected in thousands of installations . . . are two good reasons why you should have the complete story about this modern asbestos-cement pipe developed and produced by Johns-Manville to carry water more efficiently and more economically.



For all the facts about Transite Pressure Pipe, write to Johns-Manville, Box 290, New York 16, N. Y. Ask for Brochure TR-11A.

TRANSITE PRESSURE PIPE

*Transite is a registered Johns-Manville trade mark

For steel, cast iron and Transite pipe. Single massive bolt simplifies installation. We suggest ordering 30 days ahead of requirements.

M. B. SKINNER COMPANY

SOUTH BEND 21, INDIANA, U. S. A.

SKINNER-SEAL SERVICE SADDLE

"Washington calling!"

We were expecting this call. In a sense it is the people of America on the other end of the telephone. For some time they have been calling upon our government to take whatever steps are necessary to equip our fighting men for any job they may have to do.

Korea has proved the fallacy of limited preparedness. You know now that the nation is girding for survival. The people of America have said—and rightly—that private industry should provide the Armed Forces with whatever is necessary.

Machines are being mobilized. "Caterpillar" products are wearing olive drab once more. Because of large military demands your present machines may have to work longer than you had anticipated.

You can get many extra hours of machine service life if you:

1. **Follow a sound program of operation and maintenance.**
2. **Consult your Operator's Instruction Book, using it as a constant guide in caring for your machines.**
3. **Secure the assistance of your "Caterpillar" dealer who now, more than ever before, is your working partner for the grim job that may lie ahead.**

• • •

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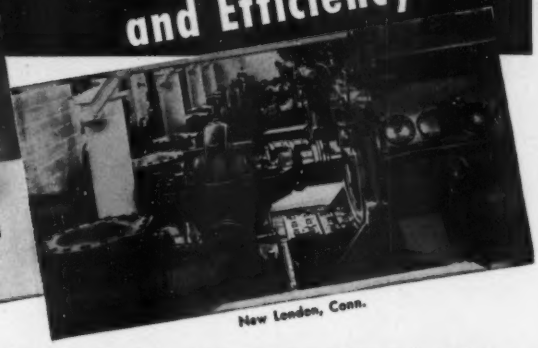
CATERPILLAR

REG. U. S. PAT. OFF.

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment

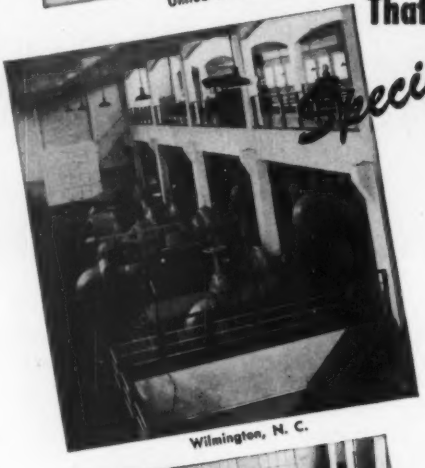
✓LOW POWER COSTS
✓LOW MAINTENANCE & REPAIR COSTS
Sustained Quietness and Efficiency...

United States Army Water Works



New London, Conn.

That's Why So Many Municipal Water Plants Specify MORRIS CENTRIFUGAL PUMPS



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Rugged in construction . . . with design stresses low for smooth, trouble-free operation . . . MORRIS CENTRIFUGAL PUMPS run quietly and uninterruptedly over long periods of continuous operation. Sustained high efficiency—the result of correctly related impeller and casing designs plus Morris' quality construction—keeps power consumption down. Service and repair costs per million gallons are held to a few cents. Daily experience over a period of years confirms the wisdom of selecting MORRIS equipment.

Consult our engineers now regarding your particular needs. There's a MORRIS pump for every job, and more than three-quarters of a century of pump-building "know how" behind every MORRIS pump.

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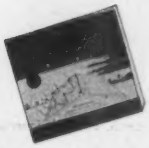
Check the booklets which apply to YOUR type of jobs, on the coupon below. Mail it with your name and address to our office nearest you, TODAY.



FIBRECOAT — a low-cost mineral-armored asphalt coating for roofs, and many other outdoor surfaces such as—metals, concrete, masonry, etc.

HYDROPEL — an unsurpassed new Integral Waterproofing Admix for concrete. Tests of all well-known admixes proved that HYDROPEL Concrete resists capillary moisture about FIVE TIMES better than any other admix.

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Assistance from specialists, with your problems in the uses of ASPHALTS, is yours for the asking. The field engineers at our nearest office, expert in the needs of your area, are at your service. Ask for their counsel, by mail or telephone.

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Mobile, Ala. · E. Providence 14, R. I. · San Juan 23, Puerto Rico

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PAVING HANDBOOK — new — with 80 pages of practical data, in pocket size. Includes specifications, rates of application of asphalts and aggregates, and helpful information on paving equipment.

PENETRATION PAVEMENTS—how to build modern macadam pavements of highest stability—often at lower cost than other types.

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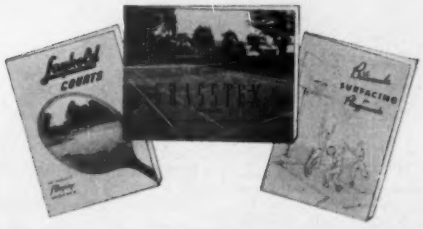
SAND MIX PAVEMENTS — how to test and pre-determine results with native aggregates and local sands, at enormous savings in cost.



TENNIS COURTS and PLAYGROUNDS—these 3 booklets condense a quarter-century of experience in building and resurfacing tennis courts all over the U. S. Before you build or resurface ANY play area, read these booklets.

Please mail to the company branch nearest you.

Gentlemen:

Please send me the printed matter checked below.
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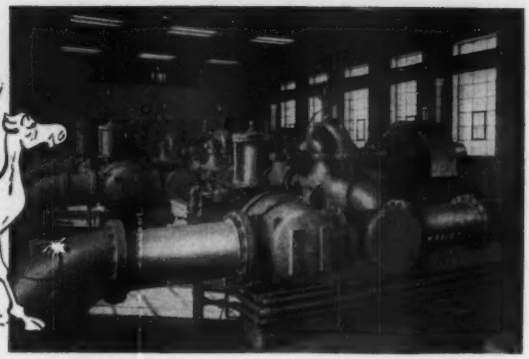
- ☐ SAND-MIX PAVEMENTS

De Laval products at work!



80 miles from lake to faucet!

That's a long way to go for a drink of water, but for the cities of Saginaw and Midland, Michigan, Lake Huron was the closest source of potable water in adequate quantity. Four De Laval pumping units handling a total of 70 MGD against 300 ft. head at the lake, and four more at a pumping station half-way between Saginaw and Midland do the entire job.

Whether you want to pump something 80 miles, 80 feet, or 80 inches, give us a call.

Pittsburgh "flood-proofs" it's water supply!

This new 100 million gallon per day De Laval pump for Pittsburgh is supposed to run under water once in a while. By mounting the motor on a platform above the highest flood stage ever reached by the Allegheny River, Pittsburgh is assured of an adequate water supply even in flood times. *You may never want to run a pump under water, but you can bet our engineers will have the right answer to your problem.* Give us a call next time.

DE LAVAL STEAM TURBINE CO., TRENTON 2, N. J.

TURBINES • HELICAL GEARS • CENTRIFUGAL BLOWERS AND COMPRESSORS
CENTRIFUGAL PUMPS • WORM GEAR SPEED REDUCERS • IMO OIL PUMPS

50th DE LAVAL Anniversary

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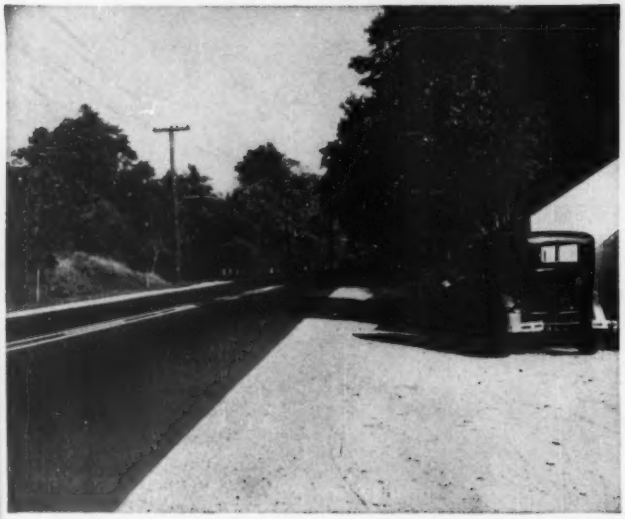
SUMMER after SUMMER...WINTER after WINTER

YOU GET BETTER SERVICE WITH TARVIA* ROAD TAR . . .



Blending with every landscape and free from glare, roads built with Tarvia* road tar take the strain out of driving. They are self-healing under impacting traffic.

The heat-absorbing qualities of black roads built with Tarvia* road tar make them easier to keep open in winter, as snow and ice melt more quickly. And they are not affected by chemicals used to remove snow and ice.

because

1. Roads built with Tarvia* road tar improve with age. Occasional applications will renew the life of the surface, and replace worn-away material.

2. TARVIA road tar penetrates surfaces and binds together the underlying material. It thus makes possible the inexpensive use of local aggregates.

3. Less TARVIA road tar is required because there are less solvents to be evaporated before the binder becomes effective.

4. TARVIA road tar is unaffected by gasoline, kerosene, or moisture. It retains its original properties.

5. TARVIA road tar holds the aggregate tightly in the surface, and produces a gritty surface which is lastingly skid-resistant.

6. TARVIA road tar may be applied at moderate temperatures, and with ordinary equipment.

The Barrett field man is always at your call for expert practical advice.

Barrett Tarvia* ROAD TAR

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TWO NORDBERG DIESELS

round out 43 years of Power Progress

for *Bermuda*

☆ *The Bermuda light plant* is located in the heavy residential section of Pembroke Parish, a scant mile from the heart of Hamilton. Consequently there can be no objectionable noise . . . a problem overcome by reducing the intake and exhaust noise levels to a minimum through modern silencing techniques. Exhaust from the big new Nordberg is heard as a deep throated "whisper".

latest 4250 hp Nordberg Unit raises capacity to 15,000 kw

THE Bermuda Electric Light Co., Ltd. is now in its forty-third year of consistent growth and profitable operation. Starting in 1908, their initial installation consisted of a 70 hp producer gas engine coupled to a 50 kw generator.

Today this plant has nine operable Diesel units with a total generating capacity of 15,000 kw. The eighth and ninth units to be added are Nordberg 2-cycle Diesels . . . one 8-cylinder 21″ x 31″, 3180 hp unit purchased in 1939—and a new 10-cylinder 21½″ x 31″, 4250 hp unit installed in August, 1950. This latest Nordberg Diesel is the largest unit in the plant and operates a 3300 kw generator at 225 rpm.

In spite of a natural leaning toward English-made equipment, the people in the Bermuda plant are most enthusiastic in their praise of Nordberg Diesels . . . as proved by their repeat order for this latest engine.

Cost for power generation in this plant averages under one cent per kwh, delivered to the power house switchboard . . . which *includes* every item of expense including repairs, operation and maintenance, overtime pay, sick benefits, etc.

This is just one example of the way in which Nordberg Diesels, in sizes up to 9600 hp, are used to meet the power needs of the world. Write for details, outlining your power requirements.

NORDBERG MFG. CO., Milwaukee 7, Wis.

P451

BUSCH-SULZER
A DIVISION OF NORDBERG

NORDBERG
DIESEL ENGINES

LESS 'SHUT-DOWN TIME' DUE TO ADVERSE WEATHER WITH THE SEAMAN MIXER

When a sudden rain sends your road crew to shelter — you can start up your mixing operations again hours sooner if you have a SEAMAN.

Why? Because the SEAMAN'S aerating action quickly removes excess moisture by accelerating evaporation. Wet aggregates are readily dehydrated and a mix affected by adverse weather can be easily re-processed.

Mixing can be continued through colder weather, too, for even though the binder is sluggish in flow, a few additional low cost passes with the SEAMAN will bring the mix to the required standard. And, even in normal processing the SEAMAN is invaluable for reduction of solvents in a bituminous mix.

Those are just some of the advantages of a multiple pass machine. You *can* operate — you *can* complete the job even when conditions are unfavorable. That means a lot in terms of profit and the avoidance of costly shut-downs.

Spring and autumn months are notorious for bad weather. Protect yourself — with a SEAMAN.

The 1951 edition of "Soil Stabilization Methods" — completely revised. Up-to-the-minute information for the road-builder. Send for it now. Ask for Bulletin 25.

The SEAMAN multiple pass method protects against processing failure when, due to bad weather or soils which resist pulverization, additional trips are needed. Further, multiple passes permit cross-mixing to blend out "lean" and "fat" spots.

The SEAMAN TRAV-L-PLANT is a complete processing unit for bituminous construction, soil-cement or any stabilization where water is employed. In addition to spray bar, pump, pump tachometer, fifth wheel and intake hose, all standard equipment—the SEAMAN TRAV-L-PLANT can be equipped with a meter to record total gallonage used.

SEAMAN
MOTORS, INC.
292 N. 25th St.
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EAGLE HAS THE MOST COMPLETE LINE OF TRAFFIC CONTROLLERS AVAILABLE!

EM Series (Bulletin C10)
6-Circuit pretimed non-interconnected

EF Series (Bulletin E10)
Multidial, Expansible pretimed (1-, 2- or 3-dial)

EA Series (Bulletin D10)
Basic 15-Circuit pretimed interconnected and non-interconnected

ET40 Series (Bulletin F10)
Semi-Vehicle-Actuated

1. Full accessibility for maintenance.
2. Parts, such as signal contacts and cams, are interchangeable with pretimed EAGLE Controllers.
3. Dependable Rotary Action Switching Mechanism.
4. All up-to-date Controller Accessories are easily added.
5. Positive cam shaft signal actuation . . . no relays in the signal circuits.
6. All relays used are jack-connected.
7. Standard Radio Tubes Used throughout.

ET50 Series (Bulletin F10)
2-Phase Full Vehicle-Actuated

1. Full accessibility for maintenance.
2. Parts, such as signal contacts and cams, are interchangeable with pretimed EAGLE Controllers.
3. Dependable Rotary Action Switching Mechanism.
4. All up-to-date Controller Accessories are easily added.
5. Positive cam shaft signal actuation . . . no relays in the signal circuits.
6. All relays used are jack-connected.
7. Standard Radio Tubes Used throughout.

Interchangeable parts and features mean a reduction of inventory, a reduction of man-hours and a reduction of expense over the long life of all EAGLE equipment.

It pays to STANDARDIZE on EAGLE EQUIPMENT!

It's you who benefits from the many interchangeable features of the Eagle Line of Controllers.

For example, ET40 Semi-Actuated Controllers may be installed into existing EAGLE EA Controller Cabinets or into like Semi-Actuated Controller Cabinets by just "plugging them in" . . . they're arranged for both EA knife-jack connection and jack-plug connection.
The ET50 Full-Actuated two-phase Controller is also jack-connected and may be interchanged with existing Full-Actuated Controllers.

EXPORT AGENT
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In Canada: The Northern Electric Company Belleville, Ontario.

EAGLE SIGNAL CORPORATION Moline, Illinois

SIMPLICITY of AMERICAN METERS

MEANS A SMALLER STOCK OF PARTS

With fewer moving parts and a more simple construction than most water meters, maintenance and repair cost of American Meters is unusually low. Parts stocks are kept at the absolute minimum both for number of items and quantity of each one.

For example, all intermediate gear train parts are supplied individually. Measuring chamber halves can be replaced separately, not just as a complete factory-matched assembly. One part of an assembly replaced today must make a perfect fit with the rest of the parts though they be 20 or 30 years old.

Write for full details.

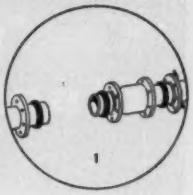
BUFFALO METER CO.

2902 MAIN STREET, BUFFALO 14, NEW YORK

If you have to install a valve in a hurry--with an eye toward economy....

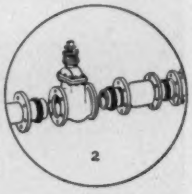
***...specify* EDDY**

Cutting-in Valves and Sleeves



After excavation and removal of section of pipe, glands and gaskets are placed on pipe and sleeve. The sleeve is then pushed into position.

1



Valve is placed between pipe-end and sleeve, and pushed home against pipe. Sleeve is seated into bell of valve.

2

Glands, gaskets, bolts and nuts are then assembled at the 3 joints and tightened, using a ratchet wrench only.

3

Since 1849 EDDY For Long Service

EDDY

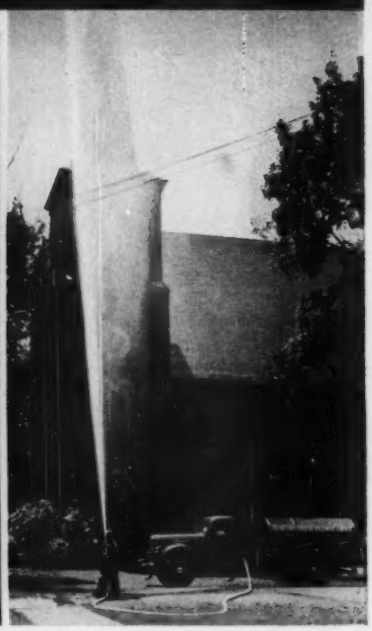
VALVE COMPANY

A Subsidiary of James B. Clow & Sons

WATERFORD, NEW YORK

Starting with step "1" above, two men with a ratchet wrench can install an Eddy Mechanical Joint Cutting-in Valve and Sleeve on an existing pipeline in less than 25 minutes. Every joint is bottle-tight under pressure, without caulking or lead-melting. Thus, the work can be done in any kind of weather, or in a flooded trench. Valves meet AWWA specifications; are available in 3 to 12" sizes for sand-cast and centrifugally-cast iron water pipe. Stock up now, for speedy installations.

The "machine of a dozen uses" can Flush Streets or Fight Fires!



Perhaps you've seen an Etnyre in action sanitizing city streets. If so, you've noticed how it cleanses streets up to 42 feet in width on ONE trip . . . reducing bacterial count of street dust by 65% . . . driving all litter to the sewer so that the street behind the flusher is sparkling clean, refreshingly cool . . . operating day or night, irrespective of parked cars!

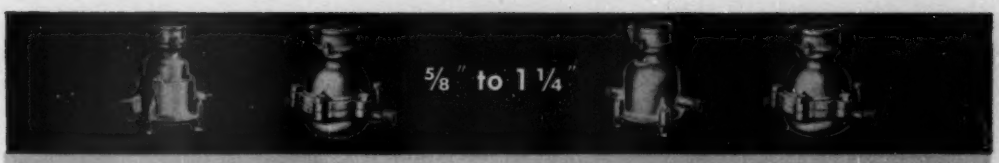
But did you know that an Etnyre Flusher can be quickly converted to an efficient firefighting unit, at low cost? By ordering your Etnyre with fire-fighting attachment, you get a pump booster which increases your hydrant pressure by 80 lbs. You get connections for a hydrant or suction hose, also for fire hose and nozzle. And for rural communities, you can get a self-filling attachment enabling you to pump from a pond, water tank, or well.

Get the facts on this versatile Etnyre Flusher — write, wire, or phone for data and prices . . . now!

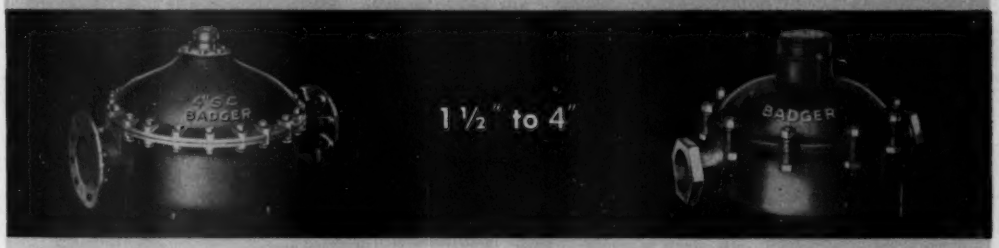
ETNYRE Street Flushers

"THE MACHINE OF A DOZEN USES"

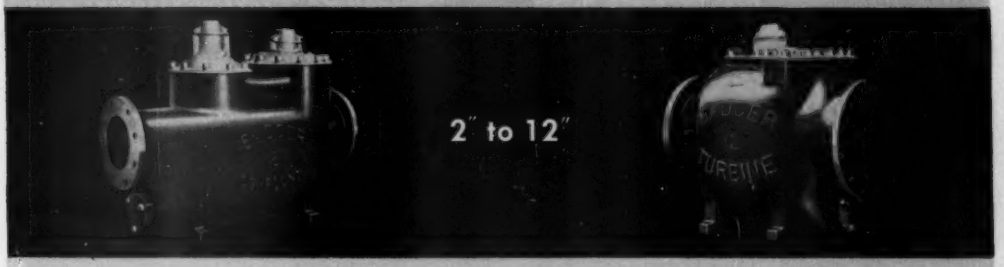
E. D. ETNYRE & CO., Oregon, Illinois



there's a RIGHT SIZE and RIGHT TYPE



# of BADGER *Precision* WATER METER



for every water meter service

Badger makes the meters you need . . . any type, any size, for any water-measuring job in home or industrial service: 5/8" to 1 1/4" home service meters; 2" to 12" Turbine (Current) Meters; 2" to 10" compound meters and industrial meters...of many sizes and types...also time-and-money saving accessories vital to efficient installation and servicing, including famous Badger Meter Testing Machines. For complete meter service, it pays to contact Badger.

"MEASURING THE WATER OF THE WORLD"

First for Accuracy • Low-Cost Maintenance • Durability • Sensitivity

BADGER *Water* METERS

BADGER METER MFG. CO., Milwaukee 10, Wis.

Branch Offices: New York City • Philadelphia
Worcester, Mass. • Savannah, Ga. • Cincinnati • Chicago • Kansas City • Waco, Texas
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YOU GET PPD* PIN POINT DETECTION

ONLY WITH

GOLDAK EQUIPMENT

The name GOLDAK, on electronic instruments, eliminates guesswork . . . it's your assurance of Pin Point Detection at all times, in any kind of weather. Throughout the world, with companies who need instruments that are accurate and durable, first choice is GOLDAK.

MODEL L46
SENIOR
LEAK DETECTOR

Detect costly leaks in water and low viscosity fuel lines, in their exact position. Completely portable, simple to operate. Latest electronic improvements and high quality parts, assures unequalled performance. Save time and labor, eliminate costly waste leakage with Goldak Model L46.

MODEL 620
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Pin Point Detection of Goldak's Model 620, saves you time and money, with immediate location of Buffalo Boxes, Valves, Covers and Buried Metals. Large areas surveyed in a few moments. Sharp, clear signals. Untiring operation, weighs only 8 lbs. Sturdily constructed, all-weather use. High quality parts assures maximum sensitivity, low operating and nominal replacement costs.

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DON'T LOSE
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For speedy heating of Tar and Asphalt for road, street and airport runway repairs use Connery's style W kettle, the most efficient heating kettle of its kind.

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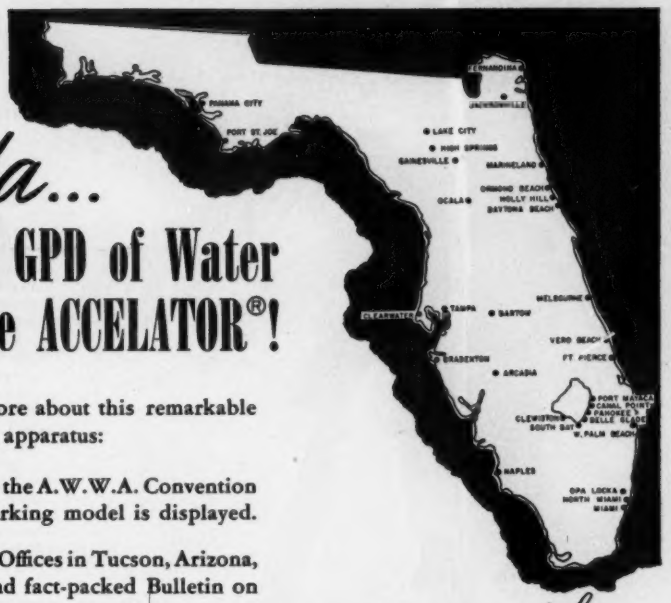

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- Visit the Infilco Booth at the A.W.W.A. Convention where a transparent working model is displayed.
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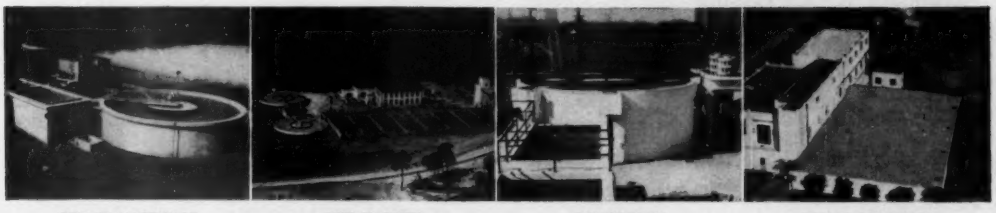

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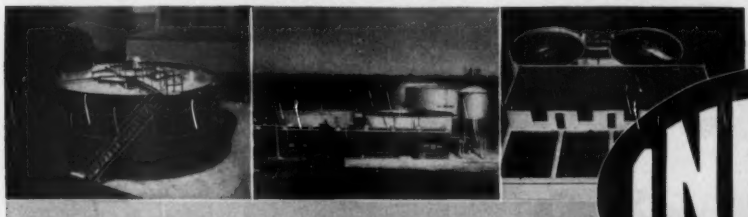

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TUCSON, ARIZONA

WITH OFFICES IN PRINCIPAL CITIES

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BETTER WATER CONDITIONING AND WASTE TREATMENT SINCE 1894

WORLD'S LEADING MANUFACTURERS OF WATER CONDITIONING AND WASTE TREATING EQUIPMENT

Finian's

Folly *or (How to Make a Monkey Out of Rising Costs!)*

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Imagine Finian . . . dreaming of reduced overhead by doing away with his organ grinder friend!

Like any good businessman, Finian should have known you can't reduce overhead by eliminating productive labor . . . but you do reduce overhead by making labor more productive.

For years the makers of Warsop Power Tools have been reducing overhead for smart businessmen all over the world by producing rugged, dependable portable rock drills and paving breakers that do more work . . . faster. Yes, the work done by a Warsop Portable Drill or Breaker more than equals four additional men in your crew . . . and can be used on any job, large or small.

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Contractors, railroads, electric power and water companies, logging road constructors, mining and quarrying companies find Warsop Portable Rock Drills and Paving Breakers especially valuable in:

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power scythe attachment cuts WEEDS—BRUSH—GRASS

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rotary snowplow attachment does one hour's shoveling in 10 minutes!

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GEOPHONE locates leaks without digging

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When the discs are placed on the ground (as pictured) the Globe Geophone detects by sound the exact location of leaks in water or steam pipes. Acclaimed for its accuracy, the Globe Geophone has become indispensable in Public Works Departments and Industrial Plants throughout the United States.

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Operating on the principle of the seismograph, the Globe Geophone is without question the most sensitive and reliable instrument for detecting underground leaks.

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This could be the most important conference ever held. The discussions in Miami will cover timely problems that are perplexing all water works operators. Should world conditions fail to improve this may be the last national meeting for many years. It deserves your attendance. We hope to see you there.

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BOOTHS 90-91-92

We invite you to meet and greet old friends and new in our exhibit area. Our facilities are at your disposal. Feel free to use them.

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KID, WHEN YOU'RE A GRAN'FATHER THESE DRESSERS'LL STILL BE TIGHT!

More than 60 years of use and half a million miles of pipe have proved that pipe lines stay tight when joined with Dresser Couplings.

On new mains or main extensions, Dressers assure a line that's *flexible-tight*. Specially compounded rubber gaskets protect lines for life against punishing stresses of vibration, expansion, contraction. Up to 4° deflection per joint—a big advantage when you're laying out a curve. Leakproof joints are assured because Dressers provide controlled gasket pressure through controlled bolt tightness around the joint.

Dresser Couplings are installed rapidly, and the longer lengths possible with steel pipe reduce the number of joints needed. No heat to damage linings—no need for workmen to go inside the pipe. Even inexperienced help can get lines in service sooner. You save costly man-hours, get life-time dependability.

DRESSER

"FLEXIBLE-TIGHT"

COUPLINGS

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Dresser Couplings are available in sizes 3/16" through 72" and larger. Ask your Dresser Sales Engineer for details, or write to our main office.

Millions of Dollars are Lost

In a country as big as ours millions of dollars are lost through faulty and inefficient water metering. For more than 65 years Hersey has been on the job making Water Meters and through this organization have come many developments that have made water meter history.

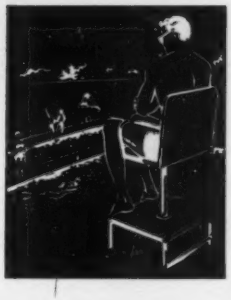
Our engineering department, ever alert to improved efficiency at a constantly decreasing maintenance cost, gives you today what we think is the best Water Meter in the country. Ask experienced water works officials who use

HERSEY WATER METERS

HERSEY MANUFACTURING COMPANY

SOUTH BOSTON, MASS.

. . . make *Your* municipal beach complete with a STANDARD *Steel Pier*



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All steel . . . endorsed by Camps, Resorts, Civic Organizations. Will withstand all the use you can give it. Designed for SAFETY FIRST!

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No maintenance . . . Sectional . . . Easily assembled. Available with Ladders . . . Benches . . . Diving Board . . . Railing . . . Steps . . . Guard Tower.

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Beauty in every detail. Baked enamel finish.

Send us a rough sketch . . . giving water-depth and dimensions to meet your dock need. We will quote prices and make our recommendations without obligation.

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FERRIC SULPHATE

Taste and Odor Control

Proper and efficient coagulation has long been recognized as an aid in removing certain types of tastes and odors. It would be erroneous to assume that any coagulant could completely solve your taste and odor problems without assistance from other control measures. However, it is wise to take advantage of efficient coagulation in the solving of these problems.

The above is just one of the many advantages of FERRI-FLOC, the superior coagulant.

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Is your city prepared for EMERGENCY DISASTERS?

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can be used . . .

. . . to convert panel delivery trucks into emergency ambulances at very low cost . . .

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526 W. Chevy Chase Drive
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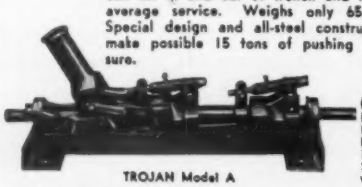
Sweeping the Country since 1940!

The TROJAN pipe puller and pusher — Cuts Costs! Saves Time!
• Simplifies installation or renewing water and gas service lines under pavement

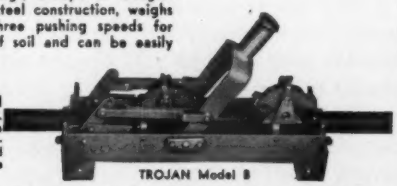
MODEL A—for ½" to 1" pipe. One man can lift it in and out of trench and install average service. Weighs only 65 lbs. Special design and all-steel construction make possible 15 tons of pushing pressure.

MODEL B—will push up to 2" pipe without additional dogs, clamps or wedges. Heavy duty, all-steel construction, weighs 140 lbs. Has three pushing speeds for different types of soil and can be easily reversed.



TROJAN Model A

DOUBLE ACTION AND CONTINUOUS OPERATION
No re-setting or grip required. Push pipe is made of double extra heavy steel pipe with inside couplings for butt joint. Pilots and Special Couplings will handle variety of jobs.



TROJAN Model B

The TROJAN Manufacturing Co., 1112 Race Drive, Troy, Ohio
41 GREENWAY—HAMDEN, CONN. **BOX 465—MEMPHIS, TENN.**

MI-CO Parking Meters are Famous for:

1 SIMPLICITY
2 RUGGEDNESS
3 LOW MAINTENANCE
4 QUICK SERVICING
5 LONG LIFE
6 TOP EARNINGS

SEE REGULATIONS ON OTHER SIDE
INSERT ONE COIN AT A TIME
TURN HANDLE TO STOP AFTER EACH COIN
FREE PARKING ON SUNDAYS
MI-CO METER

Simplicity of design, sound engineering, and unusually rugged construction are inherent characteristics of MI-CO Parking Meters. By-products of such design and structural superiorities are:

UNUSUALLY LOW MAINTENANCE. This is assured because MI-CO's have fewer moving parts—on some models only six. A minimum of places for trouble to occur.

QUICK SERVICING—an important consideration because meters that are down for any length of time become a liability.

EXCEPTIONALLY LONG LIFE. The ability of MI-CO's to stand the "gaff" has repeatedly been proved in hundreds of installations, many of them five to ten years old. Plenty of MI-CO's have been in operation more than ten years, and reports indicate that they are still giving dependable, low-cost service.

TOP EARNINGS FOR MANY YEARS. You'll be interested in figures which show the consistently high earnings of MI-CO Meters year after year.

Here you have the reasons why MI-CO Parking Meters *outwork, outlive,* and *outearn* more expensive and more complicated types of meters. Compare the simplicity of a MI-CO with meters having complex mechanical mechanism—many of them so complicated they must be returned to the factory for adjustment. A big MI-CO advantage is that when one does need attention, the adjustment usually can be made in a few minutes right at the meter location. Very little time is lost, and costly repairs obviated.

All things considered, we believe your best buy in the parking meter field is MI-CO. We'll be glad to send you facts and figures which prove the dependability of these meters over long periods of time.

MI-CO METERS, 231 Court St., Covington, Ky.
Division of The Michaels Art Bronze Co., Inc.

CHAPMAN

Standard Sluice Gates

Have Interchangeable Parts that Eliminate Match-Marking

There's no need for match-marking with Chapman standardized Sluice Gates — stem and couplings are completely interchangeable. All repairs and replacement parts can be easily installed in the field *without alterations.*

Depending on your needs, these Chapman Sluice Gates may be operated by hand, hydraulic cylinder or motor unit. The motor unit comes completely wired — ready for installation. For additional information write . . . *today!*

The Chapman Valve Manufacturing Company
INDIAN ORCHARD, MASSACHUSETTS

...ST OFF THE PRESS

Bulletin #9041...32 pages of data, photos and drawings in color describing the Dorrco Hydro-Treator... the high-rate water treatment unit that gives these results

PLANT	JUNCTION CITY, KANSAS	LOCKLAND, OHIO	APPLETON, WISCONSIN	A CANADIAN PAPER CO.	T.V.A., SHEFFIELD, ALABAMA
OPERATION	SOFTENING	SOFTENING	SOFT. COLOR & TURB. REM.	COLOR REM.	ALGAE & COLOR REM.
NO. & SIZE OF UNITS	2–35' DIA.	1–31' DIA.	1–45' DIA.	2–80' DIA.	1–50' DIA.
CAP. PER UNIT, M.G.D.	1.5	1.0	3.1	10.0	3.0
GAL./SQ.FT./MIN.	1.08	.93	1.35	1.34	1.07
AVG. TURB. EFF. PPM	LESS THAN 0.2	5.0	3.4 TO 4.7	3 TO 5	4 TO 7
SLUDGE—% SOLIDS	33 TO 45.5	34.9 TO 39.2	16.7	—	—

Write for your free copy today . . . or, better still, come see our exhibit in booths 118 and 119 at the A.W.W.A. Convention in Miami, April 29 to May 4 and pick up your copy there.

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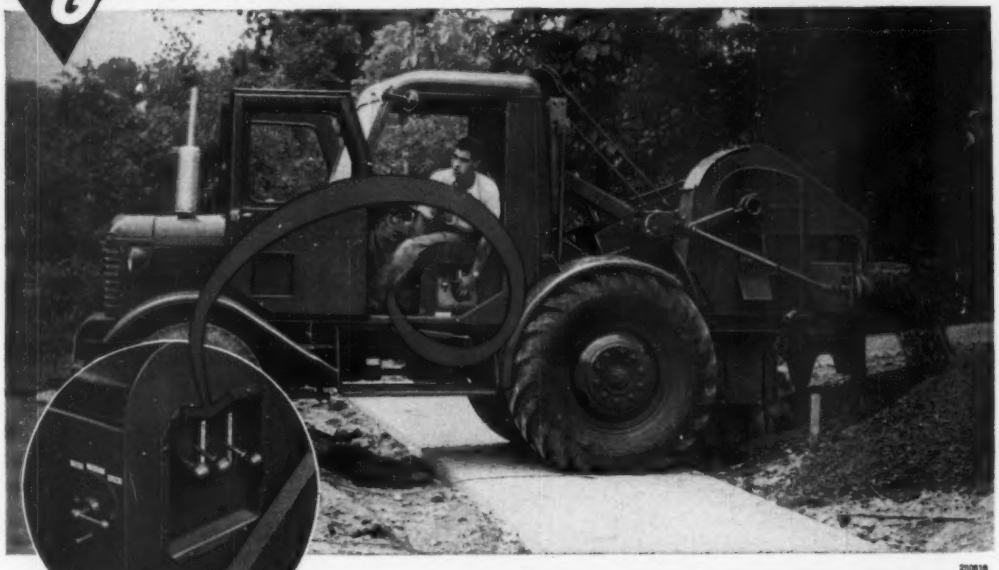
B-G Runabout SERVICE DITCHER



with HYDRA-CROWD

finger-tip hydraulic control of crowding speed independent of bucket line speed

The Model 705-A Runabout now features the Hydra-Crowd, which provides an infinite range of crowding speeds from 0 to 16 f.p.m., independent of bucket line speed. With its 15 m.p.h. road speed and Vertical Boom milling action — and new Hydra-Crowd control — the Runabout combines mobility and digging efficiency to make possible lowest cost per foot of trench in all digging conditions the year around.

The Hydra-Crowd — hydraulic transmission of power to the driving wheels — allows the operator of the Runabout, with a twist of the wrist, to keep it going at top digging efficiency through varying soil conditions.

SEND FOR BULLETIN!

Send for *Bulletin* 705-A which describes completely all the advantages you gain when you use a Model 705-A Runabout Service Ditcher.

Outstanding Runabout Performance Features

- Year around operation
- 5½", 7½", 10½" cutting widths down to 48" deep
- 15 m.p.h. road speed
- Control of digging from cab or ground
- Fastest digging in everything from loam to coral rock
- Instant stop—quick reverse
- Digs clean trench—no ramp to be dug by hand
- One-man operation

Barber-Greene, Aurora, Illinois

Here's the Most Revolutionary Highway Invention Since the "WHITE" [illegible]

Modernize Your Antiquated Road-Marking Equipment in Just 10 Minutes!

VACU-LINER *

An entirely new superbly engineered instrument for use with standard road-marking equipment . . .

- Pays for itself in the very first few days of operation!
- Assures precise highway marking under all conditions!

VACU-LINER . . . a corrosion-resistant, electro-coated, seamless high grade metal alloy instrument which assures straighter lines through better vision, equal distribution of paint from edge to edge, sharper edges on curved lines, in lettering, etc. No contact with the ground—no fire hazard due to static sparks—no wear. *VACU-LINER does away with replacements of attachments!*

VACU-LINER now being used with perfect results with hand-gun, one, two and three-gun power equipment in cities, counties, states throughout the nation!

*Protected by Patents Pending

SOLD ON UNCONDITIONAL MONEY-BACK GUARANTEE

MAIL THIS HANDY COUPON TODAY

HUNT PROCESS COMPANY

Hunt Process Co.
7012 Stanford Avenue Dept. A4
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Gentlemen:

We want.....VACU-LINERS @ $18.75 each for.....type guns.

We want.....VACU-LINERS @ $18.75 each for.....type guns.
(Designate type of gun for correct bracket.)

We understand that VACU-LINERS are sold only on an Unconditional Money-Back Guarantee. RUSH OUR ORDER—POSTPAID—and complete instructions to:

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NAME_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

Ready for emergencies—any emergency

HOMELITE

Carryable

PUMPS GENERATORS and CHAIN SAWS

No matter what the emergency . . . a storm, a flood or anything else . . . you'll need, as history has proved, Homelite Carryable Pumps, Generators and Chain Saws. Fully mobile, easily carried by one man, these gasoline-engine-driven units, give you a highly flexible means of repairing damage and restoring safety in the fastest possible time.

For all types of emergency lighting. With Homelite Carryable Gasoline-Engine-Driven Generators, you can operate brilliant floodlighting for urgent night repairs. You can supply power to restore telephone or other communications paralyzed through loss of normal power. You can supply electricity for hospitals, relief centers, or other urgent requirements until normal power is restored.

For flooded buildings or fighting fires. Homelite Carryable Pumps can be rushed to any flooded area, to pump out cellars fast. Each pump handles up to 15,000 gallons per hour. Pumps water thick with debris without clogging. Can be used also for fighting isolated fires, with water pumped from nearby wells, brooks, rivers or ponds.

For cleaning up the damage. Every disaster leaves a trail of damage. Fast clearing of this damage is essential . . . to rescue lives and to facilitate repairs. Have Homelite Gasoline-Engine-Driven or Electric High Cycle Chain Saws handy for this work. With one of these saws, one man can do more work than two men . . . *and much faster.*

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PUMPS • GENERATORS • BLOWERS • CHAIN SAWS

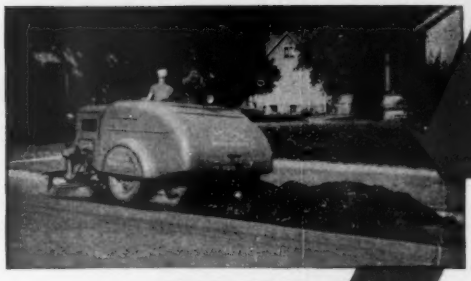
PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE

CORPORATION

104 RIVERDALE AVENUE • PORT CHESTER, N. Y.

One Thing Leads to Another



REAR DUMP

The Model "40" dumps to the r[illegible] esumes sweeping in less than a minute, without l[illegible] leaving the path of travel. The rear broom is [illegible]essible for inspection or refilling.

FRONT STEER

The Model "40" drives like a truck, for simplicity, visibility and public safety. The operator has an unobstructed view of traffic and children at play . . . both gutter brooms are visible at all times.

DIRECT BROOM-TO-HOPPER SWEEPING

No complicated, expensive elevator or conveyor mechanism to keep in repair. Finger tip hydraulic control moves hopper gate to carrying and dumping positions. Load can be transported any desired distance.

YES,

in the Model "40," and

only in the Model "40," will you find this combination of features—each made possible by the other two—each making a major contribution to superlative performance and lasting service and satisfaction.

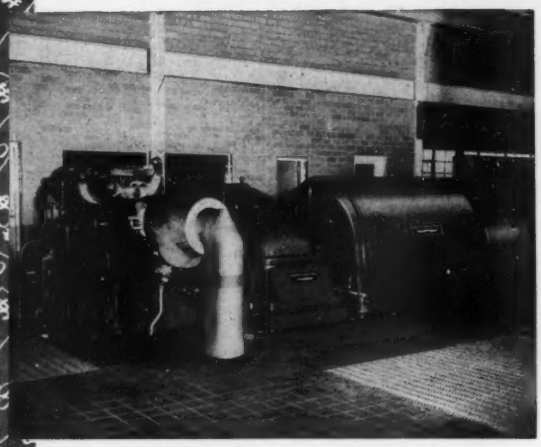
AUSTIN-WESTERN COMPANY
Aurora, Illinois, U.S.A.

Austin-Western

FACTS ABOUT THE

Most Profitable Turbine Generator Investment

YOU CAN MAKE...



One of two Worthington 4000 kw turbine generator sets installed in a mid-western municipal power plant, operating on 600 #G and 750 F.T.T. Steam exhausting to 28" Hg vacuum.

Worthington's Experience and Undivided Responsibility Assure Low Cost, Dependable Power

Builders of steam turbines for over 30 years, Worthington's Steam Turbine Division is backed by the experience and resources of the entire Worthington organization — recognized leaders in the power plant field for more than a century. In view of today's increased turbine pressures and temperatures — and the resulting needs for new and special materials — this vast, combined source of technical knowledge has proved of tremendous practical value in developing turbine design, construction and performance.

Generators Are Worthington's, Too

The generators used with Worthington Turbines are built by a Worthington subsidiary that has specialized in this field for over 45 years. This means that Worthington, as manufacturers of *complete* turbine generator units, assumes *undivided responsibility* for the coordinated design, assembly and performance of these units.

Before shipment, Worthington Turbines and Generators are assembled together *as units* for testing and adjustment — eliminating the necessity for doing this after installation. Also, for installation and service, Worthington turbine specialists and regular Worthington service men are always available from our District Offices throughout the country.

Check These Over!

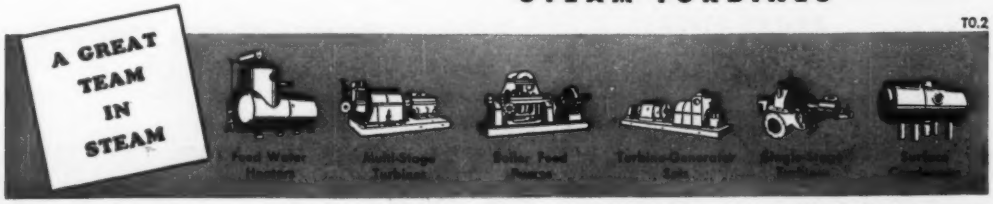
Adding up, Worthington's matchless power plant experience . . . huge manufacturing facilities . . . long specialization in both turbine and generator manufacture . . . undivided unit responsibility . . . and skilled technical service . . . are the best assurance you can get anywhere of efficient, economical steam turbine power.

Worthington makes turbines in a wide range of sizes and types, each one designed to make steam do more work. For details proving *there's more worth in Worthington*, contact your nearest Worthington representative. Or write to *Worthington Pump and Machinery Corp., Steam Turbine Division, Wellsville, N. Y.*

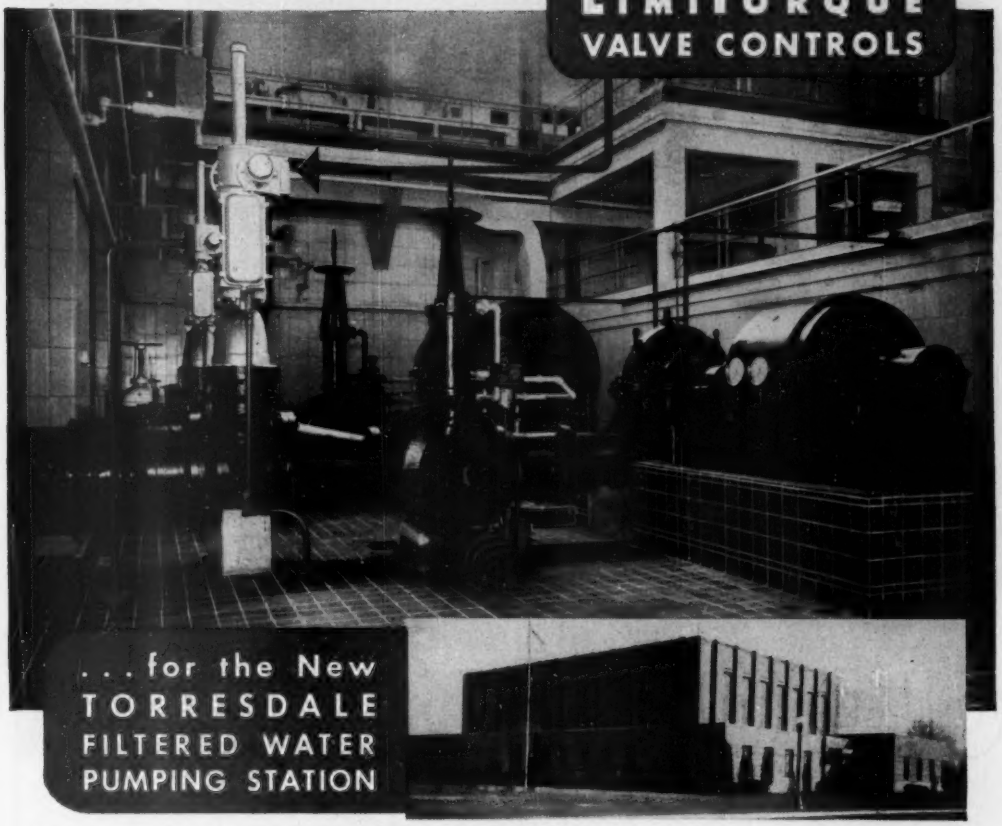
WORTHINGTON

STEAM TURBINES

T0.2



PHILADELPHIA PICKS PHILADELPHIA LIMITORQUE VALVE CONTROLS



. . . for the New TORRESDALE FILTERED WATER PUMPING STATION

Here, as at so many other modern water works stations throughout the country, LimiTorque Controls were selected for valve operation.

LimiTorque Remote Control permits one man to open and close large or inaccessible valves by merely pushing a button. All the while he can see the status of each valve on a panelboard. This saves considerable time and manpower and assures a better coordination of plant operation.

Damage to seats, stems, discs, etc., is prevented because LimiTorque shuts off the power if an obstruction occurs.

LimiTorque fits all types of valves and may be actuated by any available power source such as electricity, gas, water, air, steam, etc.

Your valve manufacturer can supply them.

Valves shown with LimiTorque Controls were made by A. P. Smith Co.

Write for a copy of LimiTorque Catalog L-30 which gives full details of all types of LimiTorque Controls. Please write on your Business Letterhead.

Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK • PITTSBURGH • CHICAGO • HOUSTON
IN CANADA: WILLIAM AND J. G. GREEY LIMITED, TORONTO

Industrial Gears and Speed Reducers
LimiTorque Valve Controls

when they're
buried
100
years
they'll still be
full of
life!
Most widely-used and best-known type of cast iron pipe joint is the standard water bell—designed for caulked lead make-up.
Bell and Spigot Joint
A time-saving, easily installed mechanical cast iron pipe that reaches the job with all joint materials complete.
Clow Mechanical Joint
For exposed pipeline work. Flange dimensions and drilling conform to requirements of A.S.A. Class 125 for flanged fittings and valves.
Flanged Joint

CLOW Cast Iron Pipe & Fittings

The proven ability of cast iron pipe to resist corrosion and give a century and more of service, is the best reason why you should specify it for your municipal water supply system: it passes the *real* test of economy—*long life.*

Cost-conscious city officials find it actually costs less to specify Clow Cast Iron Pipe and Fittings. They've discovered that once cast iron pipe is installed, there's practically no maintenance, repair or replacement required. They know it's the *best* pipe investment.

Clow Cast Iron Pipe is centrifugally cast—in sizes from 3 to 24", in 18' lengths, and for working water pressures to 250 pounds. Meets Federal Specifications WW-P-421 for Bell and Spigot Cast Iron Pipe for Water. Can be easily cut in the field if needed, and drilling and tapping it for services results in superior threads and perfect connections.

Send today for our book, "Pipe Economy"

JAMES B. CLOW & SONS

201-299 North Talman Avenue

CAST IRON

Chicago 80, Illinois

National Cast Iron Pipe Division, Birmingham, Ala.; subsidiaries Eddy Valve Company, Waterford, N.Y.; Iowa Valve Co., Oskaloosa, Iowa

Standard Clow Cast Iron Pipe Fittings

All types of Clow Cast Iron Pipe Fittings are offered in straight and reducing sizes for use with Bell and Spigot Joint, Mechanical Joint and Flanged Joint cast iron pipe.

BELL & BELL ONE-EIGHTH BEND

MECHANICAL JOINT 90° ELBOW

90° STANDARD FLANGED ELBOW

Special Fittings

Clow foundries are well equipped to produce your special fittings promptly and accurately, to meet particular requirements, and to solve unusual installation problems.

THEY PUSHED A BUTTON... AND SAVED $10,000

In only 6 months, too!

The owners of this Superior Dual-Fuel Engine can switch from oil to gas or back to oil, depending on which fuel is available or more economical. That's how they rang up a $10,000 saving in fuel bills in only 6 months of operation.

Owners of these engines can run them on diesel oil, natural gas or waste gas. A push of a button promptly switches the engine from one fuel to the other.

Maintenance costs stay low on Superior and Atlas engines, whatever the fuel. Extra precision, conservative ratings, extra strength and the dependable, economical 4-cycle principle combine to make a Superior or an Atlas Engine your best buy over the years. Continent-wide parts and service facilities assure you of dependable service from your engines. A combined 100 years of Superior-Atlas engineering and engine-building are your assurance of the best design and construction.

Write for bulletins describing Superior and Atlas engines to meet your requirements, in sizes up to 1500 horsepower.

Superior ENGINES

ATLAS Imperial DIESEL ENGINES

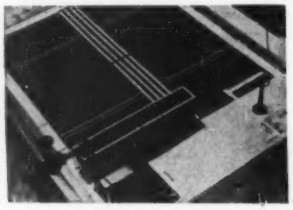
THE NATIONAL SUPPLY COMPANY
ENGINE DIVISION
Plant and General Sales Office: Springfield, Ohio

DIESEL ENGINES . . . NATURAL GAS ENGINES . . . DUAL FUEL ENGINES

Men with WATER ON THE BRAIN . . .

Is there something wrong with your town's water supply? Hardness? Turbidity? Silica? Alkalinity? Fluorides? Color? Taste? Odor? If you are plagued by any one of them, it's a good idea to specify Permutit water conditioning equipment.

— *should know about the* PERMUTIT PRECIPITATOR!



The Permutit Precipitator brings you a new and more efficient means for removing impurities from water. It does this by precipitation, adsorption, settling and upward filtration. Its sludge blanket is kept fresh and active at all times. The Precipitator requires less space, less time and less chemicals than previous designs of reaction and settling tanks.

Write today for full information about this economical equipment to The Permutit Company, Dept. AC-4, 330 West 42nd Street, New York 18, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance Street, Montreal.

Water Conditioning Headquarters for Over 38 Years

PERMUTIT

"Specials" are a Specialty of LOCK JOINT...
ADAPTORS— LOCK JOINT TO CAST IRON PIPE
Elbows, wyes, tees, crosses, outlets, manholes, reducers, bevels, adaptors... *any* special pipe you require is available in standard Lock Joint design. And if standard specials won't do the job, "special" specials may be designed to individual specifications. Lock Joint Concrete Pressure Pipe can be connected swiftly and efficiently to any standard water pipe of other material. All specials are engineered with the same care and high safety factor that have made Lock Joint the pipe of unexcelled durability and dependability.
FLANGED OUTLET IN FULL LENGTH PIPE
LOCK JOINT 90° ELBOW
CROSS IN FULL LENGTH PIPE
LOCK JOINT TEE
BEVELED SPIGOT ON FULL LENGTH PIPE

LOCK JOINT PIPE COMPANY

Est. 1905

P. O. Box 269, East Orange, N. J.

PRESSURE PIPE PLANTS: Wharton, N. J., Turner, Kan., Detroit, Mich.

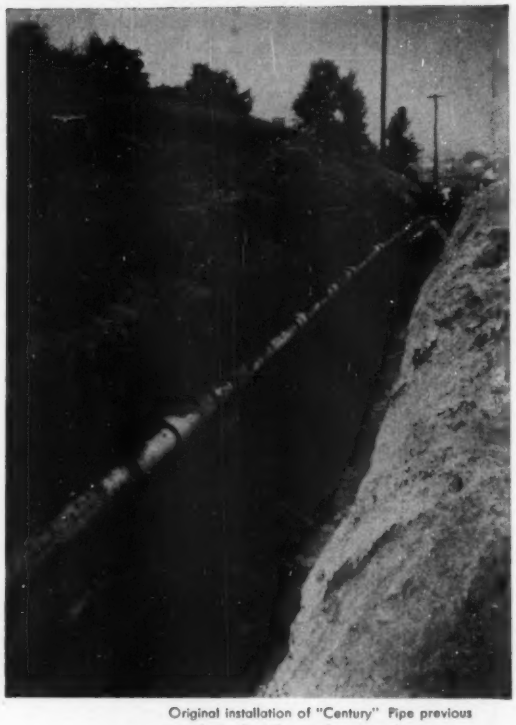
BRANCH OFFICES: Casper, Wyo. • Cheyenne, Wyo. • Denver, Col. Kansas City, Mo. • Valley Park, Mo. • Chicago, Ill. • Rock Island, Ill. Wichita, Kan. • Kenilworth, N. J. • Hartford, Conn. • Tucumcari, N. Mex. Oklahoma City, Okla. • Tulsa, Okla. • Beloit, Wis. • Hato Rey, P. R.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters as well as Concrete Pipes of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

The water main that never grows old—

"Century"®

ASBESTOS-CEMENT PIPE!



Original installation of "Century" Pipe previous to relaying it at the new lower grade.

Engineers: Tighe and Bond, Holyoke, Mass.
Contractors: Scott Bros., Ludlow, Mass.

CONSIDER the experience of water department officials in South Hadley Falls, Mass.: In 1950, it was decided to add three miles to the existing system of "Century" Pipe. At the same time, it was necessary to relocate several hundred feet of the original pipe to make it conform to the grading plans for a new development area. But, because "Century" Pipe never grows "old," there were no difficulties involved: A trench was dug to the new grade paralleling the original pipe run, and the same "Century" Pipe, with *the same Simplex Couplings was relaid and reused at the new level!*

The high re-use value is just one example of the continuing economies of "Century" Asbestos-Cement Pipe—economies that start with the low cost of the pipe. "Century" Pipe, though exceptionally strong, is light in weight—is economical to ship and store; can be handled easily and laid quickly. It can be cut and tapped in the field. And, because "Century" Pipe never tuberculates and will not rust or corrode, its original carrying capacity never decreases; it does not increase pumping costs; the pipe is always efficient, always "new"!

Before you buy or specify any pipe for water mains, get the complete story on K&M "Century" Asbestos-Cement Pipe. We'll gladly send details upon request.

Nature made Asbestos . . .
Keasbey & Mattison has made it serve mankind since 1873

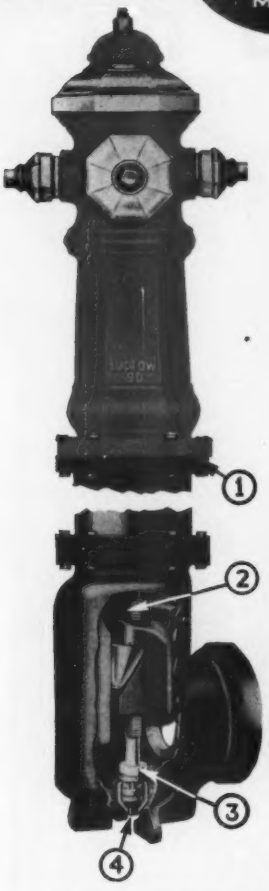
K&M Asbestos

KEASBEY & MATTISON®
COMPANY • AMBLER • PENNSYLVANIA

K&M Asbestos Rope for yarning bell and spigot joints reduces the hazard of high bacterial content following the laying of water mains. Write for details.

See us at Booths 35 and 36, American Water Works Association Convention, Miami, Florida, April 29-May 4, 1951

GENUINE TRADE LUDLOW MARK FIRE HYDRANTS ARE LANDMARKS OF INTERNATIONAL FAME . . .



1. Ground line flange is a standard feature with every Ludlow Hydrant.
2. High tensile strength Rolled Bronze Stem is securely fastened to the end of the steel hydrant stem.
3. Locking device — no flooding.
4. Automatic drip completely empties hydrant of water — no freezing.

First made in the United States in 1866 by the LUDLOW VALVE MFG. CO. INC., TROY, N. Y. and made in Canada since 1930 by the CANADIAN LUDLOW VALVE MFG. CO., LTD., of MONTREAL

Today more than a million LUDLOW Hydrants are used in cities, towns and villages all over the American Continent and other parts of the world — this is proof why more and more city officials are specifying LUDLOW Fire Hydrants.

10 DISTINCT ADVANTAGES

1. WILL NOT FLOOD

When tightly closed with the drip open, the gate mechanism is locked and cannot be released except by turning the valve stem.

2. WILL NOT FREEZE

The bronze automatic drain valve located in extreme bottom of hydrant completely empties the hydrant of water after use, functions automatically on the end of the main stem.

3. VALVE FACE IS PROTECTED

When the gate is fully open, its seating face is in a vertical plane, hence no grit nor foreign matter can come to rest on its vertical surface.

4. EASY TO REPAIR

A hydrant must allow easy inspection and servicing. The best hydrant, therefore, permits the removal of all working parts as one unit. To service a Ludlow Slide Gate Hydrant you will need a wrench — that's all. But — first turn off the water! Next, turn the hydrant stem slightly in the direction to OPEN — just enough to release the locking device. Next, remove the Top Nut, Dome and Packing Plate, and then lift out the stem, without unscrewing anything below ground. The entire mechanism, including the Gate, Bronze Wedge Nut, and Drip Assembly, is attached to the Stem. No special tools, nor tackle, nor tripod are needed, nor is it necessary to remove any standpipe-sections.

5. EASY TO LENGTHEN

Hydrant can be raised without digging. Flange piece and extension stem can be inserted at the ground flange. Amount of flow is not lessened by this operation.

Friction in Ludlow hydrants is reduced to a minimum by the enlargement of the hydrant bottom and generous sized standpipes.

6. ADAPTABILITY

The head can be rotated in any direction. Hydrant breaks at ground line if knocked over by skidding vehicle.

7. QUICK WATER —

with least possible shock and pressure loss. Proper shut-off without water hammer.

8. SIMPLE CONSTRUCTION

It employs the LUDLOW Slide Gate principle, famous since 1866.

9. ORNAMENTAL DESIGN

Distinctive Diamond Design. Attracts self illumination.

10. MODERN

This model is a step forward and away from the commonplace — to achieve graceful proportions — to blend with modern architecture.

NO LUDLOW FIRE HYDRANT HAS EVER FAILED IN LINE OF DUTY!

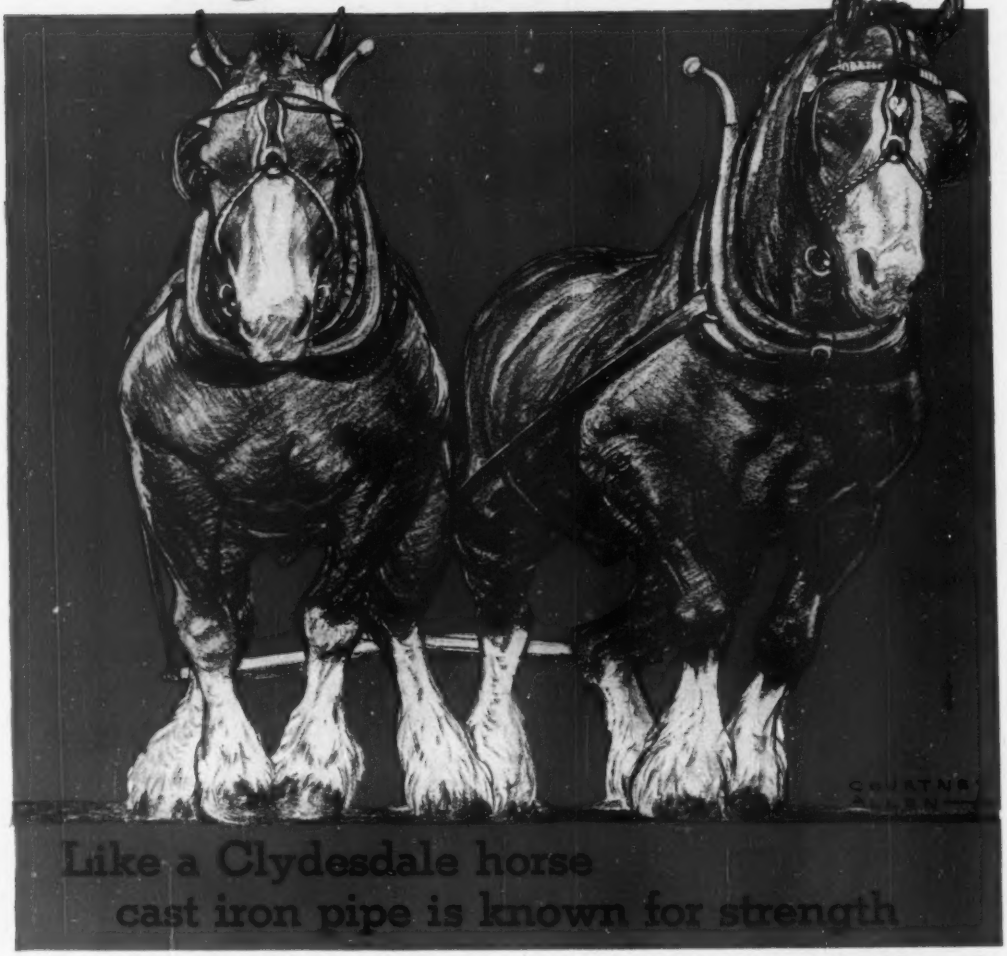
IN CANADA — CANADIAN LUDLOW VALVE MFG. CO., LTD., MONTREAL

TRADE LUDLOW® MARK

The LUDLOW VALVE SINCE 1866

MFG. CO. INC. MAIN OFFICE AND FACTORY TROY, N. Y.

in city streets lay pipe



Like a Clydesdale horse
cast iron pipe is known for strength

Known strength factors! Proved resistance to corrosion! These are your only safe and sure guides to long life and low maintenance expense of water, gas and sewer mains laid under costly modern pavements. The four strength factors that pipe must have to survive traffic shocks, heavy external loads, beam stresses and severe working pressures are listed on the page opposite. *No pipe that is deficient in any of these strength factors should ever be laid in paved streets of cities, towns and villages.* Cast iron water and gas mains, laid over a century ago, are serving in the streets of 30 or more cities in North America. These attested service records prove that cast iron pipe not only assures you of effective resistance to corrosion but all the strength factors of long life and economy, as well.

known for STRENGTH

No pipe that is deficient in any of the following strength factors should ever be laid under paved streets.

CRUSHING STRENGTH

The ability of cast iron pipe to withstand external loads imposed by heavy fill and unusual traffic loads is proved by the Ring Compression Test. Standard 6-inch cast iron pipe withstands a crushing weight of more than 14,000 lbs. per foot.

BEAM STRENGTH

When cast iron pipe is subjected to beam stress caused by soil settlement, or disturbance of soil by other utilities, or resting on an obstruction, tests prove that standard 6-inch cast iron pipe in 10-foot span sustains a load of 15,000 lbs.

SHOCK STRENGTH

The toughness of cast iron pipe which enables it to withstand impact and traffic shocks, as well as the hazards in handling, is demonstrated by the Impact Test. While under hydrostatic pressure and the heavy blows from a 50 pound hammer, standard 6-inch cast iron pipe does not crack until the hammer is dropped 6 times *on the same spot* from progressively increased heights of 6 inches.

BURSTING STRENGTH

In full length bursting tests standard 6-inch cast iron pipe withstands more than 2500 lbs. per square inch internal hydrostatic pressure, which proves ample ability to resist water-hammer or unusual working pressures.

CAST IRON PIPE RESEARCH ASSOCIATION, THOS. F. WOLFE, MANAGING DIRECTOR, 122 SO. MICHIGAN AVE., CHICAGO 3.

CAST IRON PIPE SERVES FOR CENTURIES

DESIGNED RIGHT BUILT RIGHT
FOR LONG LIFE
AND TOP PERFORMANCE

Cooper

27 "IMPERIAL"
ROLLER TYPE
MOWER

BUILT FOR THOSE
WHO WANT THE
BEST

Equipped with Rubber Covered Steel Roller and Caster Wheels

Powered with dependable Briggs & Stratton motors, new positive reel adjustment, new all-steel welded deck, heavily reinforced for added strength and rigidity. These improved Cooper roller type mowers provide the most up-to-date mowing equipment now available for service in parks, cemeteries, golf clubs, public institutions, industrial plants and private schools.

"Imperial" model available with Riding sulky, equipped with low pressure 14x400 balloon tires, weed cutting attachment, and automatic dump grass catcher.

Also available as a 65" Heavy Duty Mower with Triplex Cutting Units and Riding Attachment. Will easily maintain any lawn expanse up to 35 or 40 acres.

Write TODAY for literature and name of nearest distributor

Manufacturers of QUALITY Power Lawn Mowers Since 1926
COOPER MANUFACTURING CO.
454-456 SOUTH FIRST AVENUE, MARSHALLTOWN, IOWA

STEEL STRAPPING

551

THE MODERN WAY TO ATTACH
STREET SIGNS and HIGHWAY MARKERS

For permanent installations we recommend Stainless Steel Strap and Galvanized Steel for semi-permanent applications. Complete accessories available in both metals.

FREE DEMONSTRATION—

Without cost or obligation, we will demonstrate the A. J. Gerrard Improved Way to secure a sign.

Write for name of nearest representative.

STEEL STRAPPING
A. J. Gerrard & Co.
1952 Hawthorne Drive Melrose Park, Ill.
(Chicago Suburb)

Designing, building and erecting tanks to suit the individual requirements of industries and municipalities has been our business for nearly a century.

Write for latest Cole catalog—"TANK TALK"

R. D. COLE MFG. CO.
NEWNAN, GA Established 1854

TANKS TOWERS CYLINDERS VESSELS

HEADIN' FOR MIAMI

AND THE A.W.W.A. CONVENTION

APRIL 29

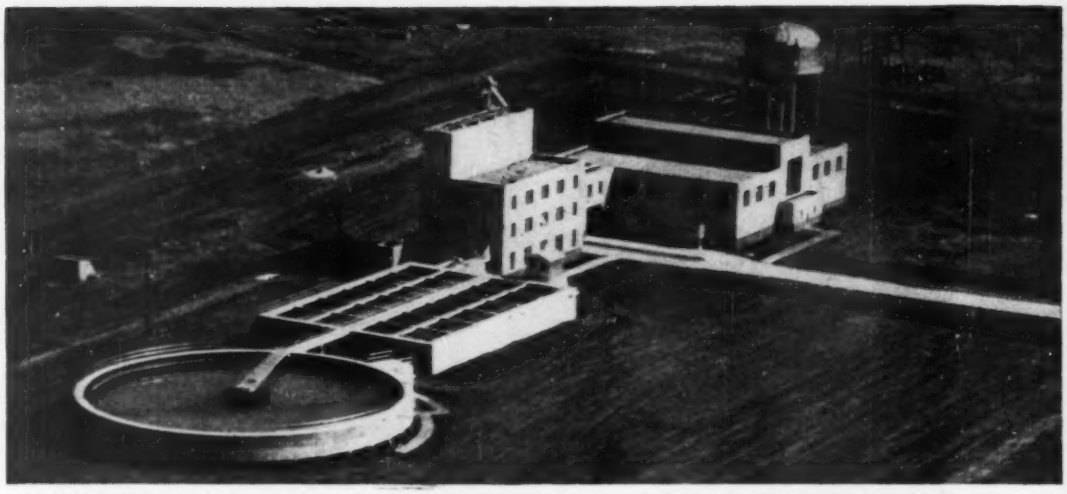
TO MAY 4

A warm welcome awaits you at the booth where R. D. Wood products will be on display. We are looking forward to showing you the famous Mathews replaceable barrel—a feature that is incorporated in the hydrants of the modern fire-fighting system of the city of Miami.

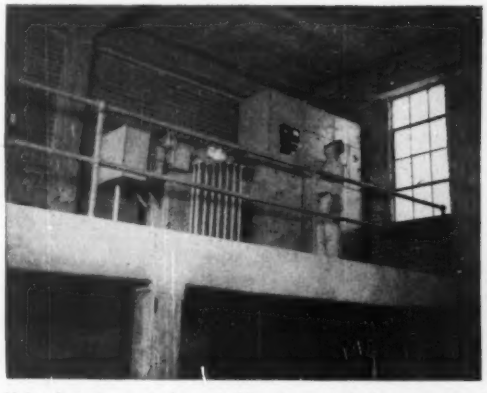
MATHEWS HYDRANTS

Made by R. D. Wood Company
Public Ledger Building, Independence Square, Philadelphia 5, Pa.
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

OKLAHOMA CITY



Lake Heffner filtration plant is rated at 15 mgd, and consists of a circular clarifier, flocculator, final settling tank, carbonator, chemical building, filtration-building, and wash-water tank. Water flows 4½ miles from the North Canadian River to the plant. Treatment provides water that is as nearly ideal as is commercially practicable.



Unit substation on balcony in filter house includes economical factory-assembled G-E Cabinetrol* panels. This equipment transforms incoming power and safely controls the low-head, induction-motor-driven centrifugal pumps. Note space-saving location.

All pumps in the plant are controlled from this G-E 2400-volt, metal-clad switchgear. This compact assembly, factory-built and shipped as a unit for economical installation, provides maximum protection of personnel.

*Reg. Trade-mark of General Electric Company

GENERAL ELECTRIC

666-60

ACTS NOW... FOR MORE WATER TOMORROW

New Filtration Plant, Powered by G-E Equipment Assures 4-year Storage Supply

Far-sighted planning by municipal officials of Oklahoma City has resulted in the addition of the Lake Heffner Filtration plant to the city's water system. Now this progressive city need have no fear of its water supply running short for many years to come. Between the new installation and the previously existing Lake Overholser plant, there is a combined surface storage that represents about a four-year supply of water at the present rate of consumption.

To help assure dependable operation of the pumps in the Lake Heffner plant, General Electric motors, control, power-distribution and switching equipment were selected. This assurance of dependability is based on the fact that General Electric has been furnishing drives, power-distribution systems and process controls for water plants, and numerous other industries, for many years. Out of this rich background of experience has come the co-ordinated G-E water-plant equipment, notable for its reliability.

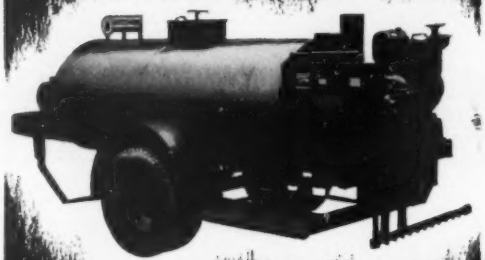
General Electric can help you, your consulting and city engineers, and your contractors in developing the electrical system for your water supply. The best time to use this help is in the planning stage of your modernization program. A call to your G-E representative at this time will go a long way toward making your water-supply program a success. *Apparatus Dept., General Electric Co., Schenectady 5, N. Y.*

The 2-mgd wash-water centrifugal pump, right, is powered by a G-E Tri-Clad* 2300-volt, 40-hp motor. Left rear, are two 5-mgd distribution-system centrifugal pumps driven by G-E 2300-volt, 300-hp synchronous motors.

This section of the pump room on the ground floor of the filter building shows a G-E 2300-volt, 600-hp, 1200-rpm synchronous motor that drives the 10-mgd distribution-system centrifugal pump in the background.

CO-ORDINATED WATER-PLANT ELECTRIFICATION

LITTLEFORD 101
UTILITY SPRAY TANK



Does the Work of 3 Units

When roads need repair, there is no Utility Black-Top Unit with the versatility of a Littleford 101 Utility Spray Tank. If you wish to use a Hand Spray for large patch jobs, it's available; if small application work is needed, there's a 10-ft. Spray Bar to do the work; and for crack filling and small patch work, there is a Pouring Pot Outlet. The 101 is a combination of three units in one. Write for Bulletin No. 5.

LB LITTLEFORD

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE 1900

LITTLEFORD BROS., INC.
500 E. Pearl St., Cincinnati 2, Ohio

Announcing

We take pride in announcing the resumption of pressure pipe manufacturing in our new, completely modern plant located in Anniston, Alabama. This plant produces Super de Lavaud Cast Iron Pipe, centrifugally, in modern long lengths.

***General Sales Offices* ANNISTON, ALA.**

Inquiries addressed to our nearest sales office will be appreciated.

122 So. Michigan Ave.
Chicago 3, Ill.

350 Fifth Avenue
New York 1, N. Y.

ALABAMA PIPE COMPANY
ANNISTON, ALABAMA

REALOCK

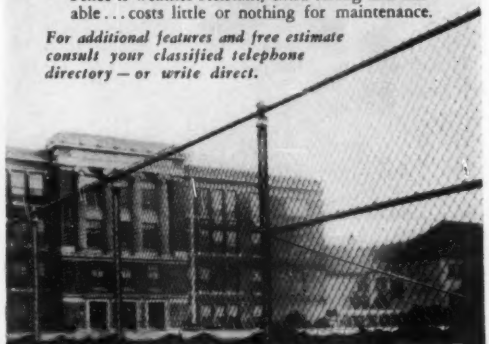
PROTECTION PLUS

Here are some of the *extra* protective advantages you get when Realock Fence guards your property.

... All fittings, hinges and locking devices have bolts *on the inside*, secure from tampering.

... Heavily galvanized by a special process, Realock Fence is weather-resistant, extra strong and durable ... costs little or nothing for maintenance.

For additional features and free estimate consult your classified telephone directory — or write direct.



REALOCK FENCE CF&I

WICKWIRE SPENCER STEEL DIVISION 361 Delaware Ave., Buffalo 2, N.Y.
THE COLORADO FUEL & IRON CORP. Continental Oil Bldg., Denver 2, Col.
THE CALIFORNIA WIRE CLOTH CORP. 1080 - 19th Avenue, Oakland 6, California
BRANCHES & DISTRIBUTORS IN KEY CITIES EVERYWHERE

THE DEPENDABLE STRENGTH OF AMERICAN CONCRETE CYLINDER PIPE IS A RESULT OF SUPERIOR DESIGN

Manufactured in diameters 14" through 42" for pressures of 100 psi and greater.

RUGGED TEST SHOWS IMPRESSIVE RESULTS

Practical tests recently conducted for the Underwriters' Laboratories, Inc. prove the remarkable strength of American Concrete Cylinder Pipe under earth loads which far exceeded the average trench conditions. Several sections of pipe were installed under 10 ft. of earth cover. The ordinary method of pipe bedding was employed and backfilling was accomplished by flooding the trench. Machinists' calipers were then used to measure changes in inside diameters at several points along each section of pipe. The average results were as follows:

	Vertical Diameters in inches	Horizontal Diameters in inches
42" Diameter Pipe	Minus .314	Plus .318
30" Diameter Pipe	Minus .052	Plus .050
21" Diameter Pipe	Minus .010	Plus .009

Subsequent examination of the concrete linings disclosed that they were sound and unimpaired under these extraordinary earth loads.

Superior design affords the most economical and effective use of steel and concrete to produce the best quality of pressure pipe at less cost to the purchaser. Economical first cost plus ease of installation, sustained capacity and trouble free service all help to reduce the cost of delivered water.

Complete information upon request.

Installing a section of 30" pipe prior to earth loading tests.

American PIPE AND CONSTRUCTION CO.

Concrete Pipe for Main Water Supply Lines, Storm and Sanitary Sewers, Subaqueous Pipe Lines

P.O. Box 3428, Terminal Annex, Los Angeles 54, California

Main Offices and Plant—4635 Firestone Blvd., South Gate, Calif.

District Sales Offices and Plants—
Oakland • San Diego • Portland, Ore.

4-50

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you'll never have to defend Cast Iron Soil Pipe

You don't need reassurance about **Cast Iron Soil Pipe,** for this *time-tested* plumbing material has been known for generations as one that will outlast any building. Cast Iron Soil Pipe . . . and fittings protect your community's health . . . and its pocketbook through decade after decade of uninterrupted service.

Nor is it by accident that every plumbing code in the country is built around **Cast Iron Soil Pipe** . . . and fittings. For Public Health authorities and municipal engineers have long known that Cast Iron Soil Pipe offers top flight insurance against dangers like ground water pollution and escaping sewer gas.

The next time you're asked to approve a "just as good" substitute, find out how long it's been used . . . *anywhere.* Then compare its service to that of Cast Iron—the material that has withstood *the test of time!*

Above or below ground CAST IRON SOIL PIPE AND FITTINGS

CAST IRON SOIL PIPE INSTITUTE
Heurich Building, 1627 K. Street N.W., Washington 6, D. C.

CAST IRON SOIL PIPE INSTITUTE

This advertisement is sponsored by

Alabama Pipe Company
The American Brass & Iron Foundry
Anniston Foundry Company
Anniston Soil Pipe Company
Attalla Pipe & Foundry Company, Inc.
Buffalo Pipe & Foundry Corporation
The Central Foundry Company
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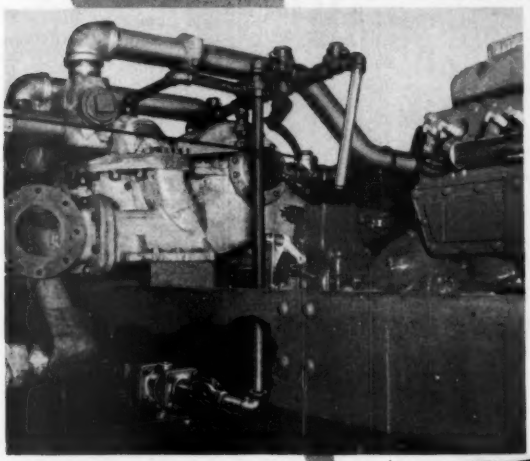
IN AMERICAN-LAFRANCE FIRE ENGINES

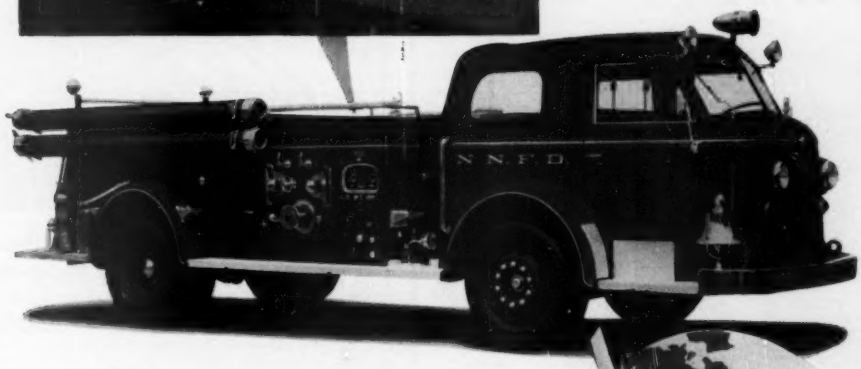
THERE'S *Extra Value* FOR YOU · · ·

A PUMP PRIMING SYSTEM that always works, and does not require continued maintainance!

Another *Exclusive* AMERICAN-LAFRANCE Feature!



Proven in over ten years of fire service use. The American-LaFrance exhaust ejector system always primes, no matter how much, or how little, you use it. Dependability counts at every service call. Simple in operation, no gears to shift, no lubrication, no clutch. Primer operation is independent of main pump. Prime or re-prime with main pump running—no shut downs.



• Seventh in a series of advertisements featuring EXTRA VALUE in American-LaFrance, first choice of the fire service.

AMERICAN-LAFRANCE-FOAMITE CORPORATION
ELMIRA, NEW YORK, U. S. A.
LAFRANCE FIRE ENGINE AND FOAMITE LIMITED
TORONTO 9, ONTARIO, CANADA

YOU CAN BE SURE OF QUALITY WHEN YOU BUY . . .

THE GENUINE
MIRO-FLEX

STREET NAME ASSEMBLIES

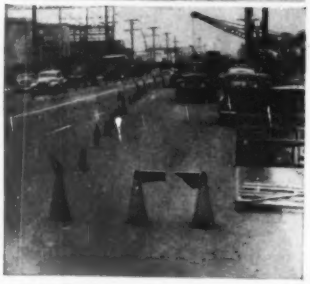
No doubt about it! Quality is apparent from first inspection. Letters are deep embossed on 18-ga. galvanized, "Bonderized" steel. Contrasting baked enamel colors for letters and border Very rigid.

Miro-Flex street name assemblies are in demand the country over. They are made for all conventional street marking – two-way or four-way in pole top or bracket type. Write for complete catalog of standard signs for marking highways or streets and traffic control signs.

4-50

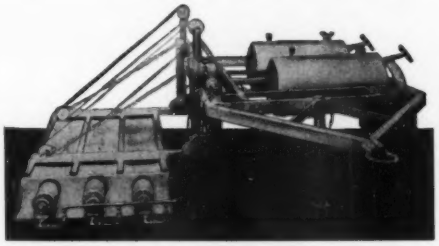
MANUFACTURED BY
MIRO-FLEX CO., INC.
1824 EAST SECOND STREET · WICHITA, KANSAS

TRAFFICONES



Don't Confuse the Motorist, Guide Him

ENTERPRISE SALES CORPORATION
231 W. Olive Avenue Burbank, California



Why destroy Base of Pavement to apply a New Top

White Surface Heaters

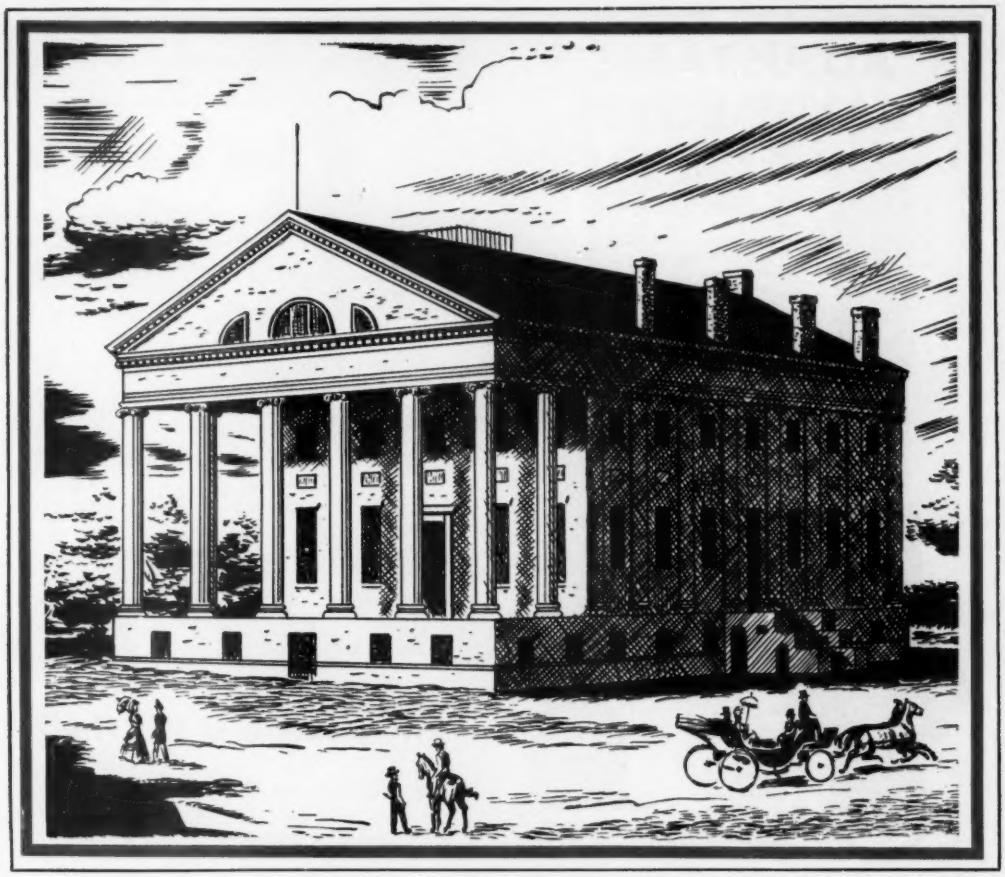
These machines offer the quickest, cleanest, most economical method for repairing or resurfacing any bituminous pavement.

They melt 1" of old surface in 5 minutes. It can be scraped away and new top applied without damaging base course. This has been successful practice for years.

2 sizes: B-4, above, has 3x6' pan; Model B-1 has 6x6' pan, 6 burners. Square cutting edges. Dual fuel tanks. Hoisting winch. Can be towed on steel wheels, and moved by hand.

Write for Catalog

Elkhart White Mfg. Co. Indiana



Richmond's State Capitol, completed in 1792, as it looked 100 years ago

Richmond, Virginia, has a cast iron water main in service that was installed well over a century ago. In those stage-coach days, *traffic shock* caused by heavy trucks and buses was, of course, undreamed of. There were no sewers and other underground conduits to cause soil disturbances and settlement. Yet this rugged old pipe had what it takes in shock-strength and beam-strength to meet unforeseen stresses. Strength, as well as effective resistance to corrosion, are prerequisites of long life in pipe to be laid under city streets. This is evidenced by the fact that cast iron water and gas mains, laid over a century ago, are still serving in the streets of more than 30 cities in the United States and Canada.

United States Pipe and Foundry Co.,
General Offices, Burlington, N. J.
Plants and Sales Offices Throughout the U. S. A.

U.S.
cast iron
PIPE
FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

NUMBER FOUR OF A SERIES

ADJUSTABLE VALVE BOXES

3-piece Screw Type 5¼" Shaft

At the left is shown our **3-piece screw type** valve box, designed for modern-day street traffic. Below: Our **2-piece extra heavy sliding type** valve box, designed to cover the stuffing box and to slide instead of rotate, is meeting favor with water companies throughout the country.

5¼" Valve Box (3-piece Screw Type) Extension:

AA—1'10" to 2'4"
A—2'4" to 3'4"
B—3' to 4'
C—3'6" to 4'6"
CC—4' to 5'
D—3'6" to 5'6"
E—4' to 6'
F—5' to 7'
G—6' to 8'

2-piece Sliding Type 5¼" Shaft

(2-piece Sliding Type) Extension:

5562-S—2' to 3'
5564-S—3' to 4'
5662-S—2'6" to 4'
5669-S—3' to 5'

EXTENSION SERVICE BOXES

2½-inch Shaft

89-A—1' to 1'8"
90-B—1'6" to 2'2"
91-C—1'9" to 2'9"
92-C—2' to 3'2"
92-D—2' to 3'6"
93-D—3' to 4'
93-E—3' to 4'6"
94-D—3'6" to 4'8"
94-E—3'6" to 5'
95-E—4' to 5'6"
100-E—4'6" to 6'
100-F—4'6" to 6'6"

2½ and 3-inch Shaft

3-inch Shaft Extension:

1½—1'6" to 2'4"
2—2' to 3'3"
3—2'8" to 4'
4—2'10" to 4'10"
5—3'6" to 5'6"
7—4' to 6'

2½" Shaft

Besides these boxes we manufacture a great many other patterns and are continually adding new designs to take care of special problems in the water and gas field.

Write for Circular

BUFFALO PIPE & FOUNDRY CORPORATION
Box 55, Station B, Buffalo 7, N. Y.

GET THOSE WEED ROOTS!

GO TO THE ROOT OF YOUR WEED PROBLEM WITH THESE DOLGE PRODUCTS

Dolge SS Weed Killer

Where no vegetation whatever is desired such as your parking places and walks. Penetrates deep down to plant roots and kills. Sterilizes the soil, preventing normal sprouting of wind-blown seeds. Weeding the thorough, modern chemical way eliminates backbreaking toil and saves the cost of many labor-hours.

E.W.T. Selective Weed Killer (2-4-D)

The efficient way to control weeds on your seeded areas. Works its way down into the roots of brush, dandelion, plantain, poison ivy, ragweed, sumac and other obnoxious plants, but does not injure most turf grasses.

Please write for descriptive literature explaining how these tested DOLGE products can best be used for your weeding requirements.

Dependable **DOLGE**
WESTPORT, CONNECTICUT

Designed for the Service Ahead...

This new Mack Type 75, 750 gpm pumper makes the fourth delivered to Massapequa, N.Y., in recent years.

They're the middleweight champs of the fire-fighting field — improved, yet service-proved Mack 505's and 75's.* Rugged, durable and packing plenty of punch, these thoroughbred performers now bear handsome new lines — family heritage from the famous big Mack 85's and 95's.

From sturdy front bumper to roomy tailboard, Mack 505's and 75's are designed and built to be safer, stronger, more dependable. And they are more efficient than ever — as indicated by such details as the individually adjustable driver's seat and by push-button priming, which eliminates the need for ground gearshift control.

In these days of unsettled world conditions and stepped-up industrial activity, it's more important than ever to have apparatus strong enough and powerful enough to meet any emergency you may face. Whatever your potential hazards, when you're planning your next apparatus be sure to *compare* — not only specifications, but actual *construction* and *performance*. That's the way to get the best — and that way, we're sure you'll choose Macks.

modernize with

Mack
FIRE APPARATUS

MACK MANUFACTURING CORPORATION
Fire Apparatus Division
Long Island City 1, N.Y.

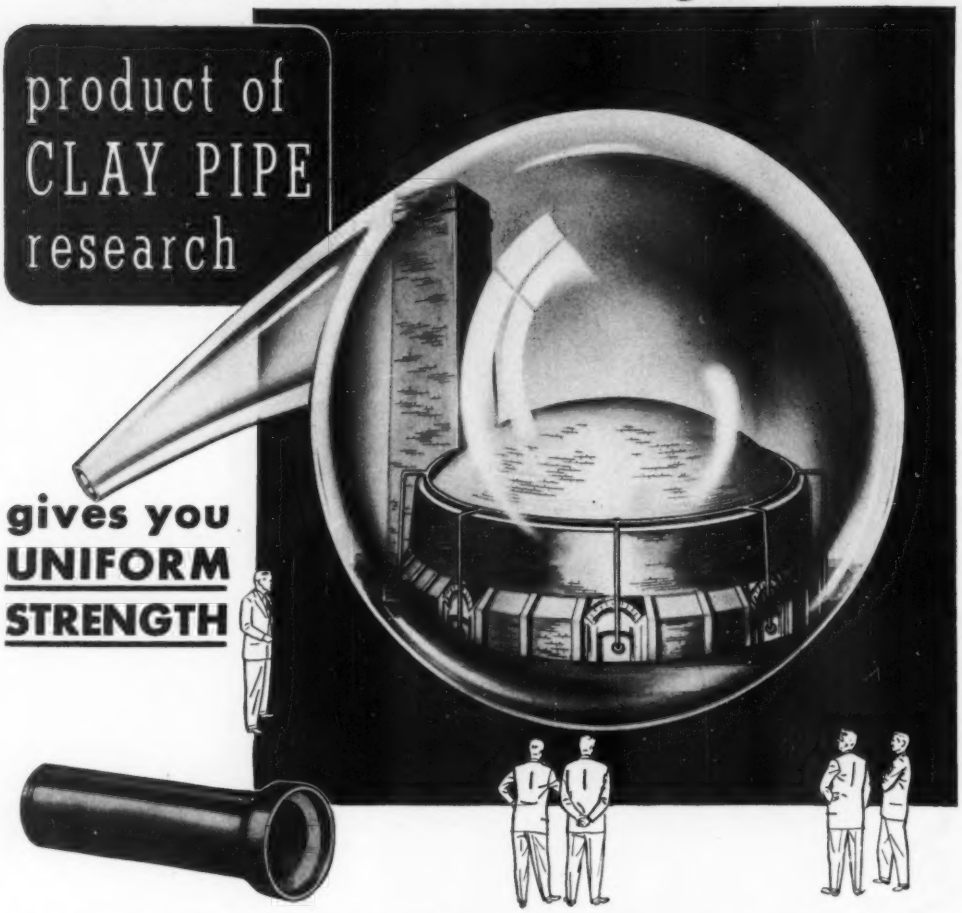
*Mack Type 505: 500 gpm triple combination pumper.
Mack Type 75: 750 gpm triple combination pumper.
Also available in squad and hose cars — city service and quadruple combination ladder trucks.

Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

TRIPLE COMBINATION PUMPERS—500 TO 1500 GPM... SQUAD AND HOSE CARS... AERIAL, CITY SERVICE AND QUADRUPLE COMBINATION LADDER TRUCKS

controlled firing...

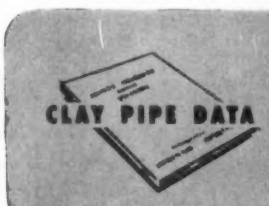
product of
CLAY PIPE
research



gives you
UNIFORM
STRENGTH

CONTROLLED FIRING . . . is a factor behind the *uniformity* of Vitrified Clay Pipe — whether it's one length, or a million. Electronic instruments correctly balance Clay Pipe firing time and temperature. This modern technology, harnessed to govern manufacturing processes, *improves* Clay Pipe's basic quality. Clay is chemically inert, completely unaffected by corrosion or the chemical wastes of modern industry. It's the *best* pipe for *your* sewerage or drainage projects.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
206 Connally Bldg., Atlanta 3, Ga.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio



WRITE FOR DETAILED INFORMATION
Additional information and data on Vitrified Clay Pipe, Wall Coping and Clay Flue Lining sent FREE on request. State your specific questions. Simply contact the regional office nearest you.

Vitrified
CLAY
CLAY PIPE NEVER WEARS OUT!
PIPE

C-151-11

MORE than a family resemblance

Regardless of what size Oliver Industrial Wheel Tractor and Ware Loader you buy . . . "66", "77", "88" . . . you get the identical superior design and performance features in each.

The smaller tractor-loaders are not built down to a price level . . . they are built up to the same quality standards as the larger models.

In the tractors, you get the famous Oliver *plus* power and easy maneuverability that get you in and out of the rough spots . . . *fast!*

In the loaders, you get the same top features in each . . . hydraulically controlled bucket for greater "breaking out" action—full bucket loads . . . hydraulically controlled discharge—easily and gently, fast or slow . . . mid-section pivot of the loader arms for longer reach of dumping position and correct weight distribution on tractor frames . . . simple, rugged design that eliminates unneeded dead weight . . . shock loads absorbed by hydraulic rams for longer tractor and loader life—lower maintenance.

Your Oliver Industrial Distributor will be happy to show you what the "more than a family resemblance" in Oliver-Ware Tractor Loaders means to you in lower cost operation. And see the Oliver color film "Task Force on Wheels."

THE OLIVER CORPORATION

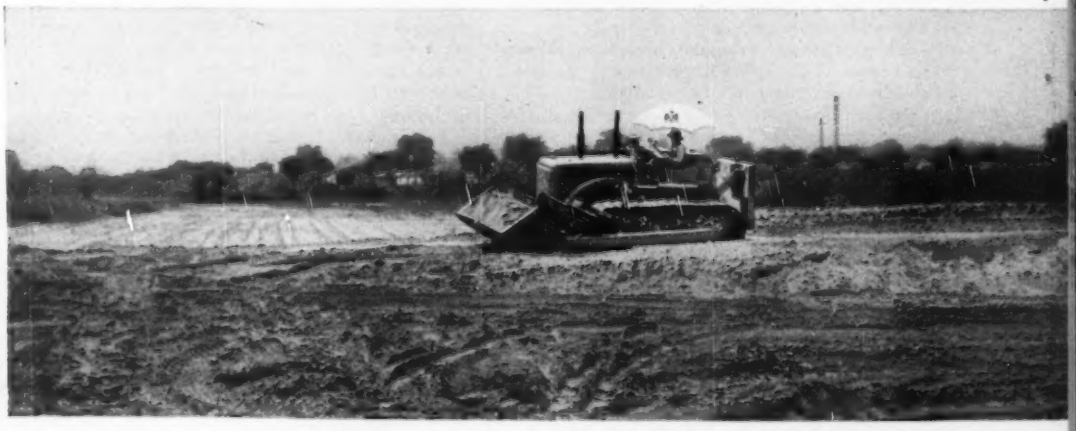
Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

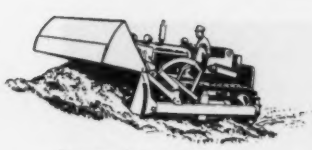
A complete line of industrial wheel and crawler tractors

From Ash-Heaps..

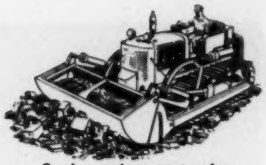
BEFORE AND AFTER— One of Columbus' Bullclams spreads a mountain of garbage before compacting it. Behind and around the International tractor lies garbage that has already been compacted— crushed, smashed, ironed out flat— by the specially curved Bullclam front.

COVER-UP— No garbage in sight now. It's been buried under a layer of clean earth, carried and spread in place by the Bullclam. And now the big red machine tackles the final grading and finishing.

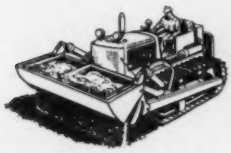




Prepares the site



Crushes and compacts refuse



Transports and spreads earth cover

Grades and levels finished area

to Airports

How Columbus, Georgia, builds runways on refuse with a Bullclam unit – the only equipment especially built to do all four steps of the complete sanitary fill job

Old-fashioned garbage disposal at Columbus, Georgia, used to make a considerable area unpleasant and unhealthy. But then Columbus "got Drott" —a Drott Bullclam powered by an International Crawler—the ONLY one-man unit specifically designed to do the complete sanitary fill job.

Disposal costs dropped to a fraction of the old method, and a long-range program of reclaiming wasteland was begun. Low bottom land next to the Municipal Airport was filled in and used for additional runways and for playgrounds. And Columbus was so pleased with its first Bullclam that it soon added a bigger model.

This fast-working equipment scoops out the excavation and compacts the refuse—crushing, smashing, grinding it flat beneath the specially curved Bullclam bucket front. Then the bucket carries the cover dirt and spreads it in place—and the Bullclam front grades it smooth to finish the job.

You do away with open dumps and smelly burners —you raise land values—you cut your city's disposal costs, with a Drott Bullclam on an International Crawler. Ask your International Industrial Distributor about it, or write for details, now.

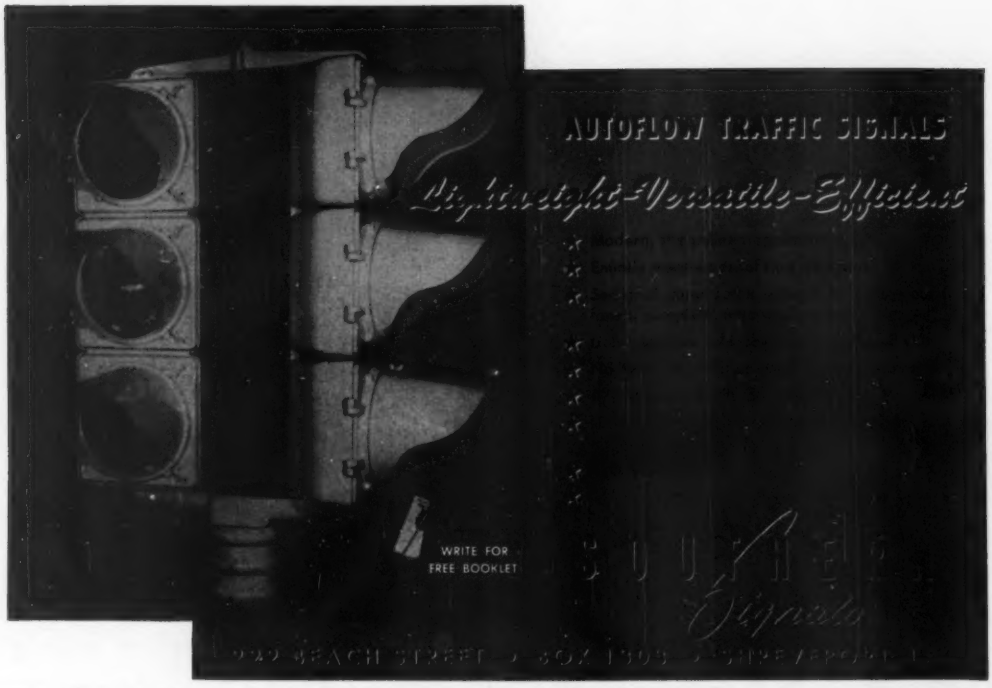
Drott Manufacturing Corporation
Milwaukee 8, Wisconsin

International Harvester Company
Chicago 1, Illinois

BULLCLAM BY DROTT

POWER BY INTERNATIONAL

POWER THAT PAYS



FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

Prompt Shipment

Inquiries and orders solicited

NORTHERN GRAVEL COMPANY

Muscatine, Iowa

P. O. Box No. 307 **Phone: 193**

Handiest Location in PITTSBURGH

Hotel Pittsburgher
PITTSBURGH, PA.

Right in the heart of town

Make the PITTSBURGHER your stopping place on every motor trip. Located right in the heart of town . . . easily reached from all major highways. Enjoy the finest in modern facilities, too . . . 400 rooms each with free radio, bath and circulating ice water. Garage service.

a Knott Hotel

JOSEPH F. DUDDY, MANAGER

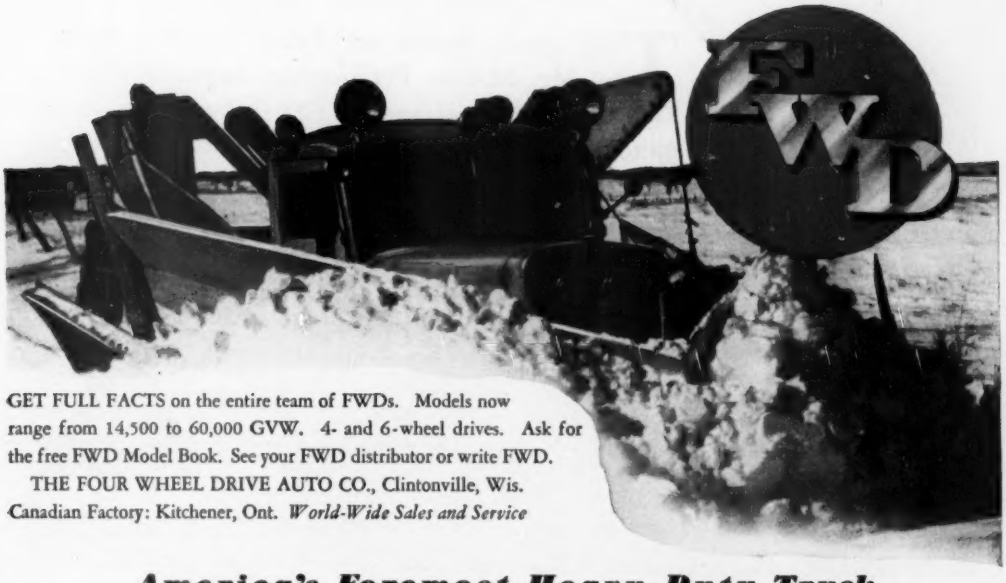
Choose an FWD and you choose More than a Truck

You choose the ability to DO MORE WORK PER YEAR

"When other trucks must stay at home . . . our FWDs are on the job. It pays out the year 'round on hauling . . . maintenance . . . snow and ice control . . . doing a *better* job and with *greater safety* — both on or off the highway."

You choose lower maintenance costs . . . longer truck life

"Our FWDs need fewer repairs because there's less strain . . . both load and power are properly distributed. We've found that an FWD has up to twice the life."



GET FULL FACTS on the entire team of FWDs. Models now range from 14,500 to 60,000 GVW. 4- and 6-wheel drives. Ask for the free FWD Model Book. See your FWD distributor or write FWD.

THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis.

Canadian Factory: Kitchener, Ont. *World-Wide Sales and Service*

America's Foremost Heavy-Duty Truck

ANOTHER EXAMPLE OF THE BENEFITS OF

SAVING WATER with WATER METERS

PUMPING COSTS ——— DOWN 25%

LESS WATER PUMPED. LESS FUEL NEEDED.
WATER TREATMENT COSTS PROPORTIONATELY
REDUCED. LESS CHEMICALS NEEDED.

LIFE EXPECTANCY
ON PUMPING EQUIPMENT --- UP 25%

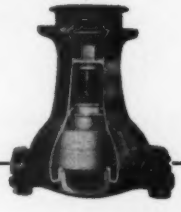
LESS WEAR AND TEAR ON ALL RELATED
OPERATING EQUIPMENT. DEPRECIATION REDUCED.

STATIC WATER LEVEL RECOVERED - 24"

MORE WATER AVAILABLE
FOR FUTURE EXPANSION

AND REVENUE INCREASED ——— 24%

THE above figures are from a recent report by Mr. Marvin Pennington, Supt. of Public Works, Steger, Illinois. The results of 100% metering in Steger point up what metering is doing in cities, towns and villages everywhere — what this may accomplish in *your* community to save water and, by so doing, to save vital materials demanded by today's industrial conditions. Your Trident representative can tell you more about this.



MODERN PARTS IN OLD TRIDENT METER

225

NEPTUNE METER COMPANY • 50 West 50th Street • NEW YORK 20, N. Y.
Branch Offices in Atlanta, Boston, Chicago, Dallas, Denver, Los Angeles,
Louisville, North Kansas City, Portland, Ore., San Francisco.
NEPTUNE METERS, LTD., Long Branch, Ont., Canada

San Francisco brings new water main

Around the Bay for Safety

New line avoids hard-to-repair underwater crossing and makes water available to new areas

By GEORGE W. PRACY
General Manager and Chief Engineer
San Francisco Water Department

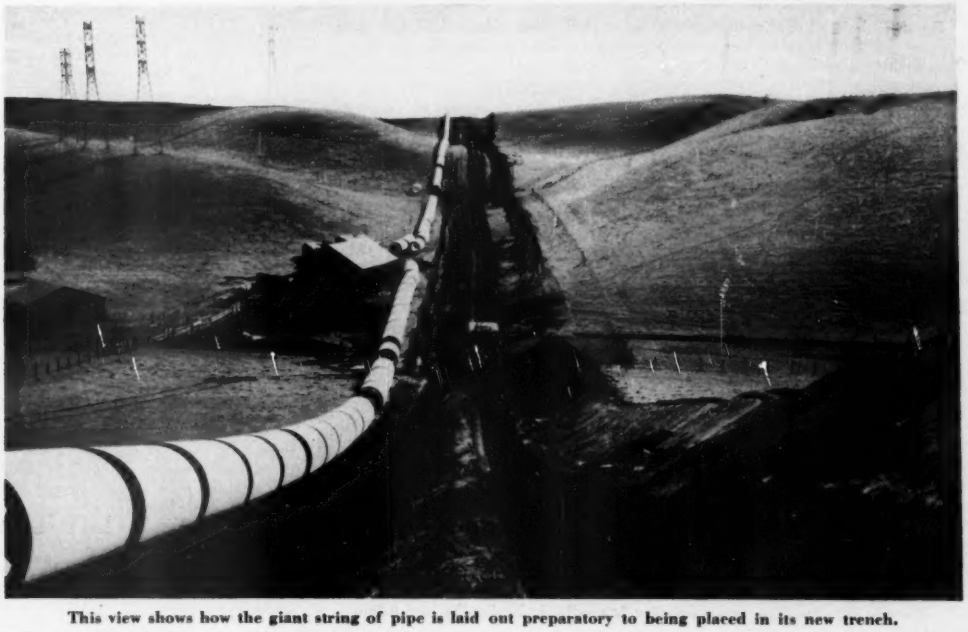
APPROXIMATELY 300 feet of 78-inch, steel-reinforced concrete pipe are being laid per 8-hour day on an 8.5-mile stretch of auxiliary line for the San Francisco Water Department, near Mission San Jose, Calif. In the early fall, when the weather was good, this average was close to 500 feet. This work forms one of three contracts, all of which will be completed this fall.

The new line will meet demands on the system of the San Francisco Water Department that have increased greatly in the past 10 years. The two present Bay Crossing pipelines follow a route which is practically a straight line between Irvington Portal, of the Coast Range Tunnel of the Hetch Hetchy Aqueduct, and Pulgas Tunnel, west of Redwood City. They discharge into Crystal Springs reservoir, whose capacity is $22,500,000,000 gallons, and cross San Francisco Bay at Dumbarton Strait by three submarine pipes.

The pipeline now under construction is aligned to follow a dry-land route, southerly from Irvington Portal around the south end of the bay and northwesterly to Pulgas Portal and will have a capacity of 76,000,000 gpd.

Although extra mileage is involved, choice of this route was made primarily to eliminate the great hazard of rupture of the submarine lines as the result of earthquake or other major disasters. In such cases, complete rupture of a single line could, and almost certainly would, result in rupture of adjacent lines, thus totally cutting off any delivery from the source of supply for a considerable length of time.

As a secondary consideration, the adopted route offers potential service to new territory which will of necessity



This view shows how the giant string of pipe is laid out preparatory to being placed in its new trench.

look to San Francisco to supplement present sources of supply.

For the purpose of bidding and award of contract, the new line is divided into Sections A, B, and C, and alternate bids were called for mortar-lined-and-coated steel pipe, and steel-cylinder, reinforced-concrete pipe. Section A extends from Irvington Portal about 8.6 miles southerly to a point near Milpitas in Santa Clara County.

On the basis of unit prices, a contract was awarded to the United Concrete Pipe Corporation in the amount of $2,147,582.50 for 78-inch steel-cylinder concrete pipe with rubber gaskets. The pipe is manufactured at the company's Stockton plant and hauled by truck to the site. The wall thickness is 7½ inches, the lengths are 18 feet and weigh approximately 20 tons each. At this time Section A is 50% complete.

Specially built ditch digger excavates a trench 10 feet wide and 11 feet deep.

A crane lays the pipe, and a dragline immediately begins the backfilling.

Section B extends from the southerly end of Section A, about 17.1 miles westerly and northwesterly to a point in the campus of Stanford University. On the basis of unit prices, a contract was awarded to Artukovich Brothers and Steve Rados, a joint venture, in the amount of $4,097,546 for 72-inch mortar-lined-and-coated steel pipe of plate thickness from ⅜ inch to ½ inch. The pipe is in 30-foot lengths, with bell and spigot joints, and was fabricated at the South San Francisco plant of the Consolidated Western Steel Corporation.

Mortar Lining and Coating

The mortar lining and coating were applied at the Pittsburg, Calif., plant of the American Pipe and Construction Company. At this time, all the pipe has been laid and tested and there remains only the placing of appurtenances and clean-up.

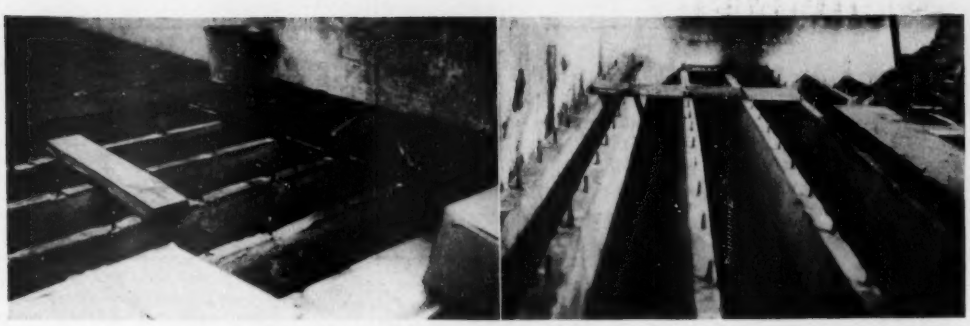
Section C, totaling about 8.1 miles, extends from the westerly end of Section B, northwesterly to a connection with Pulgas Tunnel. On the basis of unit prices, this section was awarded to the United Concrete Pipe Corporation for 72-inch, steel-cylinder, reinforced-concrete pipe for a total bid price of $2,098,882. This pipe is also manufactured at Stockton, Calif., in 22-foot lengths, with walls 7 inches thick, and weighing approximately 20 tons each. At this time Section C is 50% complete. The contracts call for completion on October 31, 1951.

Pipe Laying

The reinforced-concrete pipe in Section A is being laid in a trench roughly 10 feet wide and 11 feet deep. A specially built ditch digger, powered with a Caterpillar D8 tractor-engine, cores out this trench. It is able to chalk up a maximum of 350 feet daily through black clay, gravel, and some rock. Last fall the trencher worked a seven-day week to keep ahead of the pipe-laying crew.

A Caterpillar diesel motor grader works ahead of the ditcher, making a temporary road for the digger and the truck and trailer combinations which bring up the pipe. It also gauges out a "cradle" where the pipe is placed preparatory to lowering it into the trench.

A mobile crane, powered by a Murphy diesel engine, lowers the pipe, and a truck-mounted Lima dragline backfills the pipe.



These two views show the filters during reconstruction, with Aloxite plates replacing the gravel.

How Lewiston Rebuilt Its Filters

By WILLIAM P. HUGHES
City Engineer
Lewiston, Idaho

WE HAD TO REBUILD our water filters the first time eight years after they were installed. We rebuilt them the second time 18 years later. Now that the second rebuilding is complete, I doubt that any of us connected with the water plant will ever see those filters rebuilt again.

The filters were built in 1924 to a conventional design, using 30 inches of sand supported by 18 inches of carefully graded gravel. The gravel varied in size from 5 inches on the bottom to about 3/16 of an inch next to the sand. The sand had an effective size of .35 to .45 mm. and a uniformity coefficient of 1.4.

The filters were rebuilt the first time in 1932. The underdrains were cleaned and replaced and the filter material regraded. The underdrains, or laterals, are of 2-inch cast iron without brass eyelets in the perforations. There were two 3/8-inch holes every 6 inches on the underside.

We rebuilt the second time last year. When the filters were taken down for reconstruction with "Aloxite" plates, the filter materials were very badly misplaced. In many places the sand was not more than 8 inches deep, and in others it was much more than the normal depth. The laterals were badly clogged, causing uneven wash and displacement of materials.

Investigated Types

When it first became evident that the filters would have to be reconstructed, we investigated all types of filter construction. After consideration of the different types, we decided to investigate the porous carborundum plates and see what success was being had with them. Very encouraging letters were received. Austin, Texas, has one of the largest. The most distant city from which information was received was Nykoping, Sweden, where they are used in an iron and manganese removal plant. In this plant the joints between the plates are filled with asphalt, and they reported them as most satisfactory. Only two instances of dissatisfaction were reported in these letters and those were due to faulty installation.

This encouraged us to rebuild two of our filters in the winter of 1949 and 1950. After the removal of the filter materials, the laterals were also removed, leaving only the two flat cast iron distribution headers from which the laterals branched out. These were left as cross-distribution channels. The plates are supported by small longitudinal concrete piers which run the length of the filter, crossing the cast iron headers. These piers are 2 inches wide at the top, 6 inches wide at the bottom, and are lightly reinforced.

The filter bin was thoroughly cleaned and the floor roughened where the piers were to be poured. Holes were drilled in the floor at the pier locations and short sections of reinforcing steel fastened in them with mineral lead to serve as tie-downs. The piers are 14 inches high. Building the piers this height lowered the sand surface about 3 inches. This was done so that, if at any time in the future it should seem desirable to replace the present sand with "Anthrafilt," the increased depth recommended for this material will be available.

Everdur Bolts

The plates are fastened with 3/8-inch Everdur bolts and 2-inch by 2-inch by 1/8-inch square washers. The bolts are 6 inches long and were placed in the piers when they were poured by the use of templates, spacing them exactly on 12-inch centers. After the pouring of the piers and the removal of the forms, the piers were honed and rubbed down. All loose material, such as sand, concrete chips, and dirt was very carefully and thoroughly removed before attempting to lay the plates.

"Lumnite" cement mortar was used for the joints between the plates. The edges of the plates were "buttered" with the mortar, shoved together, and the nut screwed down finger-tight. Great care was used in making the joints between the plates, using mortar of just the right consistency so that none was smeared around on the surface of the plates. The joint between the walls of the filter bin and the plates was filled with asphalt compound to serve as an expansion joint.

The plates were not walked on after being laid, unless a short length of clean board was laid down first, so that nothing would be ground into them and lessen their porosity. The filter sand, being wet, was shoveled into a wide chute and allowed to slide down into the filter to avoid impact and the possibility of driving some of the sand into the plates.

Costs

The cost of the plates for the two filters laid down in the plant was $3,170. The Everdur bolts and washers came to $383. The cost of the completed job, including labor, material, etc., was $6.815.20 or $3,407.60 per unit. The work was done by the regular water-department crew with the addition of a few laborers.

These filters have now been in use a year and thus far have given the utmost satisfaction. They wash evenly and the initial loss of head is less than it was with the original construction. The surface of the filters is perfectly flat after washing, and the sand, constituting the effective size, is very evenly distributed over the surface of the entire filter.

What Civil Defense Is

First in a series of articles to appear in The American City on preparedness for wartime and peacetime catastrophes

WHAT do you know about civil defense as preparedness for disaster relief? What is your municipality doing about it? What ought to be done? If your town has an important manufacturing or power plant, is a railway junction, or is in a metropolitan area, what procedure are you pursuing?

There has been too much spluttering about civil defense, in THE AMERICAN CITY as well as from other sources of presumably reliable guidance. The titles of too many articles have been questions, such as, "Civil Defense: Whose Responsibility — and When?" This magazine knows of only one article that "laid it on the line"—the report by Dr. Walter L. Cronin, Director of Civil Defense, Cambridge, Mass., published in THE AMERICAN CITY for September 1950. Dr. Cronin lists 29 catastrophic situations with the laconic remark that in the event of attack, local officials must be prepared to handle them.

Specific Preparedness Essential

A look at the list may create a hopeless attitude. Yet, something must be done. In fact, there must be a prodigious amount of practical preparation; otherwise, if disaster comes, a needless degree of chaos and death will prevail. All organized groups should contribute to general civil-defense preparedness. But in this series of articles we shall be more concerned with the specifics of the post-disaster situation, and how they can be handled.

As a start, arrange Dr. Cronin's problems into groups such as the following:

1.

Hundred of simultaneous fires
Fire-fighting equipment destroyed
Communication facilities destroyed

2.

Thousands of people dead
Thousands of people buried alive in collapsed buildings
Thousands of people needing immediate hospital attention
Thousands of people seriously burned
Thousands needing minor first-aid treatment
Principal hospitals destroyed and all personnel killed
20% to 50% of your physicians killed
Lack of whole blood and blood plasma absolutely necessary to save life
Drugs, dressings, and equipment not immediately available

3.

Extensive looting
Children separated from parents
Children made orphans by the disaster
Extreme panic by population

4.

Water supply contaminated
Food contaminated and unsuitable for use

5.

A large devastated area
Roads blocked by debris
Roads jammed with vehicles and evacuees
Problem of maintaining open highways for arrival of mobile units and necessary supplies and equipment

6.

Lowered water pressure, or no water at all
Broken gas mains
Disruption of electrical power

7.

Post-disaster rehabilitation of essential services, clearing debris, restoration of normal functions
Post-disaster long-time care of injured
Post-disaster long-term housing and feeding
Relocation of homeless to new areas.

THE AMERICAN CITY conceives the ability to cope with these conditions—whether resulting from wartime bombs or peacetime disasters—to be a major purpose of civil defense. There are seven situations or groups of conditions. Each calls for specialists to do the work required. The police must also maintain order and facilitate the work of the specialists, concentrating their energies on established police functions.

The responsible groups for each of the seven situations are:

1. Fire department
2. Ambulances, rescue squads, Red Cross, all manner of first-aid services, clinics, and dressing stations
3. Police, churches, welfare agencies, etc.
4. Laboratory services, water department, food-supply committee
5. Public-works and public-utilities crews, with possible initial help from contractors
6. Construction forces consisting of the local contractors and public-works forces
7. All of the services above operating until permanent recovery of the city as a functioning municipality.

The job of the mayor, councilmen, city commissioner, and city manager is to see that every group is supplied, as far as possible, with decisions, equipment, and outside aid.

How to Start

New York City's Civil Defense Director, Arthur W. Wallander, in reviewing THE AMERICAN CITY program, set down the order of procedure as follows: (1) fighting fires, (2) rescue, (3) medical service, (4) maintaining order, (5) clearing streets, (6) restoring utility service, (7) supplying water and food, (8) cleanup.

One might think, perhaps, that clearing streets of rubble, etc., so the apparatus can get through, would be the first operation. Commissioner Wallander says: "They'll have to pull the hose *over* the rubble. Fire-fighting is first."

Disasters—so many possible simultaneous disasters—may not follow a pattern or permit a procedure to be followed in precise sequence. However, Commissioner Wallander's arrangement should certainly furnish the backbone for action under most circumstances. Fortunately, these operations, with the exception of clearing streets of rubble and possibly demolishing buildings on a grand scale, are functions and responsibilities of the municipalities. As the construction or de-construction job is less familiar, let us discuss it.

Almost every municipality has one or more contractors, a street department, and is part of a town or county also owning road-construction equipment. It is doubtful that an atomic attack will be pin-pointed. Knocking out a power plant, factory, or railway junction is but part of the objective of obliterating an area. In modern war, the bombing target is the city, and a principal purpose is to terrorize civilians. The first expectation is that in a matter of seconds there will be produced "a large devastated area."

Some specific recommendations have

already been set forth by the Associated General Contractors of America. Their report of January 18 says: "After an attack it will be essential with the utmost speed to clear shattered areas, to retrieve the dead and wounded, to demolish damaged structures which endanger life, and to restore essential facilities to use." The report asserts that general contractors can clear shattered areas and repair damage more efficiently than can other groups. The various contracting organizations in a community should be kept intact and each should be assigned to work generally similar to its civilian activity, all under the direction of an outstanding local general contractor as coordinator or general supervisor of all contracting forces in the area. This coordinator should have one or two deputies.

The report adds:

> The coordinator should have as complete information as possible as to the ability, equipment, and personnel of contractors in other near-by communities so that in case of a major disaster, requiring the mobilization of larger contractor forces than are available locally, such outside contractors may make their facilities available upon call. Every effort should be made by the coordinator to assign a contractor's forces as a unit, inasmuch as the contractor's employees are accustomed to working together, and instructions given rapidly and under stress would be more readily understood by workmen and more efficient operation would result. Each contractor's organization should operate as a team or teams.

The organization for dealing with this disaster situation must be an efficient, instantly available unit whose assignments and authority are understood and instantly facilitated by all the other units, services, and authorities: police, medical, fire, public works, and the evacuation forces. Someone must, of course, be assigned in advance to shut off damaged water, gas, and electric lines to minimize explosions and interruptions.

Acceptable Identification

All members of the construction teams should have identification acceptable to the police and associated groups. Arrangements for the passage of heavy equipment over normally forbidden bridges and streets must also be made. The construction unit and the fire department must familiarize themselves and each other with possible controversial points such as the admission of cranes and large equipment into congested areas with heavy fires. As an immediate necessity in caring for the injured and those who have been trapped in buildings, elevators, and debris, it is recommended that each demolition and clearance team should have with it a rescue squad of five or six husky men.

The Philadelphia Civil-Defense Exercise

LOCAL government is ready to take civil defense seriously, but are the national and state governments prepared to accord it more than lip service? Will tangible aid be provided soon to critical target areas to enable an adequate level of disaster-preparedness? Or, are cities expected to cope alone with the basic problems created by the present unworkable civil-defense pattern—in which they are exhorted to a sense of urgency by outpourings of Federal Civil Defense Administration publicity, but seriously hampered by the inaction of many state governments on civil-defense legislation and appropriations?

The above were some of the major questions raised at the critique of the Philadelphia-area civil-defense-test exercise conducted March 12-14 at the Convention Hall.

Four test civil-defense problems have now been conducted: the first was in Washington, D. C.; the second, including an underwater burst and a several-hour time lag between "bombs," took place in Seattle, Wash., in July 1950; Chicago was the setting for the third problem, in September 1950. But in many ways the Philadelphia exercise was the most important of all—for the first time a city attempted to draw up an actual inventory of its requirements above and beyond its own present or available resources in manpower and equipment.

In the hypothetical situation, two atomic bombs exploded in the air over different sections of the city on the morning of February 13, after only 10 minutes of warning. The bombs were each of 80 kilotons (about four times the power of the Hiroshima bombs), and consequently about 35 square miles, or 26%, of the city's area received major damage or was totally destroyed. The estimated dead as a result of the bursts totaled 246,100; and the injured amounted to 293,000, including those with burns, mechanical injuries, and radiation sickness.

The City's Reponse

How did the city respond to the challenge posed by the hypothetical attack? In the opinion of those present at the critique, the departments of the city government tackled their problems with great ingenuity, skill, and know-how. Through municipal leadership, the resources of the total community were realistically activated. There was splendid cooperation with such elements as private utilities, contractor's crews, industrial-plant-protection per-

"He refused to help, and he will be the first one to yell 'We're unprepared!' "

DRAWN FOR THE AMERICAN CITY BY CHARLES KNAPP

sonnel, and with a large number of existing community groups.

Communities in New Jersey and Delaware poured 374 vehicles and more than 3,000 men and women, including 59 fire pumpers, 160 doctors, and 229 nurses into the devastated area. From the eastern counties of Pennsylvania came 133 pieces of fire apparatus, 4,205 doctors, 1,886 dentists, 315 osteopaths, and 16,574 registered nurses. A total of 1,500 men trained in mine rescue and first aid also reported for duty in rescue operations.

But the civil-defense job was recognized from the beginning as primarily a municipal one. The divisions of the city responsible for utilizing the outside aid and mobilizing the city's resources effectively estimated that to provide a fully adequate civil-defense corps, including equipment, would require an initial investment of $8,626,365, and the additional recruitment, organization, and training of approximately 350,000 men and women.

Staggering sums? Yes and no. It should be remembered that the estimates have been made by practical men, all well acquainted with municipal resources and equipment needs. Consider another angle: in 1948 the assessed value of all real and personal property within the city was $3,417,491,435. An "insurance" premium of $8,600,000 to help protect such an investment and the lives of the more than 2,000,000 people living within the city proper, and nearly 3,000,000 within the close-knit surrounding area, seems small in comparison. Consider also Philadelphia's importance to the national production effort as a whole, as a leading industrial city and with a tremendous volume of marine commerce.

Federal and State Action Needed

Major-General Norman D. Cota, Director of the Philadelphia County Defense Council, bluntly declared at the critique that the question as to whether the city's defense plans remain "paper plans" depends upon the extent to which the state and Federal governments are prepared to back them with funds. He pointed out that the local level cannot do it all, and that a lack of legislation, and lack of funds, equipment, and directives from higher civil-defense authorities impedes the entire program. He said, "Critical target areas must be helped financially in order that they may acquire the essential tools to carry out effectively civil-defense plans. Civil defense, like military defense, is a waste of money and resources unless it is organized and trained before an enemy attacks."

Yet, most cities will be forced to wait until state legislatures and state officials act before they know what to expect in the field of civil defense. The Civil Defense Act (for which appropriations have not yet been made) requires that all information and money be funneled through state governments. But rurally dominated state legislatures have traditionally shown little interest in city problems, and it is now becoming apparent that some states have no intention of matching proposed federal grants for civil-defense purposes, nor of assuming a fair share of civil-defense costs and responsibilities.

Immediate Amendment

Many of the state legislatures will not meet again until 1953. It seems obvious that the Act should be amended immediately to provide that in states where funds are not appropriated to match available federal funds, cities may deal directly with the Federal Civil Defense Administration authorities.

Up to this time, cities have been the losers in a struggle for power between the various levels of government. A dogmatic and inflexible approach to civil defense was adopted over their protests, and federal civil-defense officials seem to have too little interest in improving the situation, or in appreciating practical municipal needs. But now that the pattern of relationships established by the Act is proving, as predicted, unworkable, cities should be told, frankly, whether there is any urgency at all to civil defense. Responsible local officials such as those in Philadelphia, who have already made great progress in civil-defense preparedness at great personal sacrifices of time and effort, have a right to know the facts, at first hand, as a guide to their future endeavors and attitudes.

Enlisting Public Support for New Taxes

By HARRY L. MORRISON, Jr.
Executive Secretary
Citizens' Advisory Committee
Alameda, Calif.

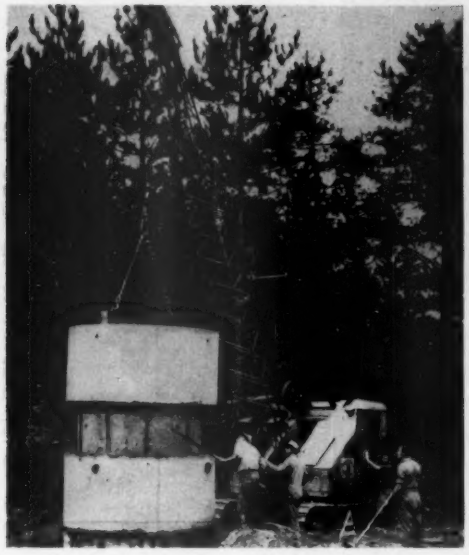
A YEAR AGO members of the City Council of Alameda were faced with the dilemma of ordering city services reduced or of raising taxes to pay for the level of service then being rendered. After extensive discussion, the thought was suggested that a problem whose decision would effect intimately so many people should be considered by a larger group of individuals than those represented on the city's governing body. Therefore, the Council appointed a Citizens' Advisory Committee made up of 25 citizens well known in the community, to survey this problem and advise the City Council on what form of action to take. To aid the Committee in its work, a full-time executive secretary was employed to do the necessary research and assist in administrative duties.

The men and women on the Citizens' Committee went through a subtle transition in political thinking in the weeks following their appointments. The many facets of governmental function and its complexities were placed before them and—in many cases for the first time—these citizens began to understand the problems of government from the official point of view. Each member of the Committee received an education in tax administration and policy, and carried this new learning back to other groups who, in turn, went over many of the problems which had already been discussed by the Citizens' Committee.

In less than two months of discussion and study at an average of two meetings a week, the Citizens' Advisory Committee came forth with a recommendation for a .5% sales-and-use tax on all articles sold in the City of Alameda. The education of the public was so complete that when the issue came up before the City Council, protest over the new tax was of such a minor nature that the tax ordinance received a unanimous vote in less than 10 minutes after its introduction.

The appointment of the Citizens' Advisory Committee not only created public support for the new tax but also succeeded in instilling a new interest in government in the public at large. By their service on the Citizens' Committee, the 25 members became so much interested in their civic government that they have gone on to survey completely the revenues and expenditures of the municipality.

When the Committee finishes its work and disorganizes, the city will be benefited for years to come by having a nucleus of well-informed citizens. With the education gained by helping make their government work, they will serve to give public support to city actions which might have been nearly impossible previously. Indeed, at a recent meeting a majority of the City Council expressed the desire that the Citizens' Committee remain intact as a definite group to give the Council advice on any problems which arise from time to time and require more thorough consideration than the Council feels it is able to give.



Thompsonville, Conn., gets water from

A Large-Diameter Well

Caisson-type well, 100 inches in diameter, with unusual design features, yields 2,000,000 gallons per day of water with unusually good characteristics.

PHOTOS COURTESY GOSSELIN

Workmen assemble the concrete cylinders for the well. Note that the joints for the outer shell are staggered with the inner shell to aid in forming a strong monolithic structure.

By E. R. SHERMAN
Engineer
The Connecticut Light and Power Co.

THE THOMPSONVILLE area in Connecticut, consisting of Thompsonville proper, Enfield, and Warehouse Point, has an aggregate population of about 14,200.

The water-supply system of this area, owned and operated by The Connecticut Light and Power Company, was modernized late in 1949 through the installation of one caisson well capable of supplying present peak consumption as well as the expected greater demand.

The Thompsonville area was served in the past by a surface system in North Thompsonville, consisting of a group of springs fed by seepage water from the surrounding watershed area. An artificial surface reservoir was formed through the construction of an earth dam, and the water was fed by gravity into storage tanks. From there it was pumped into the distribution system after chlorination.

More Water Needed

With an ever-increasing demand, this system became entirely inadequate, and a larger and better source of supply was necessary.

The simplest and most economical solution was, evidently, one or more wells installed at or near the springs, and although this area was considered by others as unsuitable and inadequate, our company put the entire matter in the hands of Caisson Wells, Inc., of New York City. This organization, after performing necessary underground explorations, reported that a single Caisson well, 100 inches in outside diameter, installed in the spring area, could comfortably supply 2,000,000 gallons per day or more.

The selection of a Caisson well for the Thompsonville area was made after a thorough study of its merits. First, the well shaft is of reinforced concrete and the screen of special metal, meaning a life-long installation. Two or more pumps can be installed on a single Caisson well, if required. The screen has an ample area but a small height, meaning greater available drawdown and hence greater capacity.

Water enters the well both laterally, through the screen, and upward, from the open bottom. Because of extremely low water velocities at the screen, danger of clogging, incrustation, or sending are greatly minimized. And finally, as is well known, a larger-diameter well yields a greater volume of water.

This will show the magnitude of the outside well diameter. The large size is an important factor for yielding reliable, trouble-free water.

Groundwater Study

The springs, situated in a low area within the drainage valley of a small brook in North Thompsonville, were fed by groundwater outcropping to the surface. Test drilling indicated that substantial unconsolidated deposits were in existence there, down to a depth of about 90 feet below ground, with the first 40 feet consisting of silt mixed with clay and fine sand, and the remaining 50 feet of sand-gravel. Underground water conditions were artesian, with static level approximately 18 inches above ground, which explained the existence of springs.

The capacity of the springs, prior to the installation of the Caisson well, was about 1,000,000 gpd, and it is worth mentioning here that after installation, the spring yield diminished but slightly.

Well Construction

A Caisson well is a reinforced-concrete vertical hollow shaft with open bottom, which is provided with a circumferential special-metal screen at

Yield from the well with a stabilized draw-down was 1,900,000 gallons per day.

the bottom. This shaft is built sectionally on the ground surface and caused to sink through excavation from within.

A novel method of caisson construction was employed in the Thompsonville well which permitted speedy sinking and a substantial saving in cost. The resulting structure, for which patent protection has been secured, was completely monolithic and very strong, and withstood the stresses developed during sinking very effectively.

First, the hollow-shaft structure was formed by two sets of precast reinforced-concrete cylinders, one set within the other. All cylinders had a uniform height of 4 feet. The outer cylinder had an outside diameter of 100 inches and the inner cylinder an outside diameter of about 7 feet, and they were so positioned in relation to themselves that construction joints along the shaft were staggered.

The annular space between the outer and inner cylinders was filled with grout while heavy vertical reinforcing bars were inserted in it and extended from the very bottom of the shaft to the top. The cylinders were placed in position by crane, and right after grouting, sinking was resumed. Installation of two cylinders, including grouting and vertical steel, took about two hours, and the entire structure was sunk to proper depth (60 feet below ground) in approximately 17 working days.

The screen itself consisted of an Everdur plate ¼ inch thick having ¼-by-1-inch oblong perforations and an open area of about 37%. It extended circumferentially all around, flush with the outside diameter of the shaft, and it was heavily reinforced from the inside with circumferential structural members and 16 columns of 80-pound rail, which were projected vertically through the first section of the shaft poured in place right on top of the screen. Screen depth was about 3 feet.

To start, a pit about 9 feet in diameter and 3 feet deep was excavated and the screen section was placed in it as a unit. The steel reinforcement was then wired in position and forms were placed from the inside and outside. Concrete was then poured to a height of 4 feet above screen top with a wall thickness of 14 inches. After the forms were removed, sinking of the structure was started. As soon as the cast-in-place section was underground, a 4-foot-high outer cylinder and a 2-foot-high inner cylinder, followed by a 4-foot-high inner cylinder, were grouted in position. The remaining inner and outer cylinders were all 4 feet high, except for the last inner cylinder which was 2 feet high, to make the wall 14 inches thick all the way to the top.

Satisfactory Gravel Formation Found

The well was sunk to 60 feet below ground, where a satisfactory gravel formation was encountered during the survey. After completion of sinking, the shaft bottom was dug ahead of the shoe and promptly filled in with traprock to a sufficient height to create a "water-bearing" plug at the bottom. This rock fill was thoroughly tamped in position by means of a concentrated load, and its purpose was to prevent infiltration of sand from the bottom.

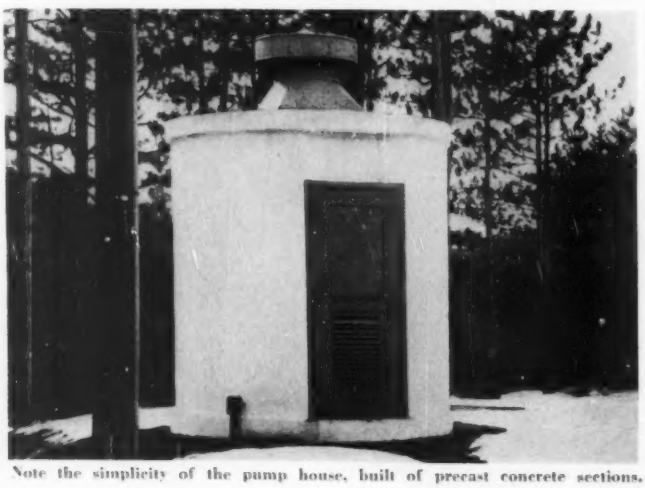
Well Developed by Compressed Air

Development of the well was then started by compressed air and heavy pumpage, until all suspended solids were removed, and until a graduated gravel pack was developed right around the screen and the bottom.

The well site, although low in relation to the general watershed area, is located about 18 feet higher than the company storage tanks in Thompsonville. It was the purpose of the project to take advantage of this difference in elevation and to obtain water from the well through siphon action, without pumping. A special siphon line was then installed in the well which can presently yield approximately 250 gallons per minute by gravity alone. The well was equipped with a 1,400-gpm Pomona pump which has been running satisfactorily since early in January 1950, when the well was put into operation.

Pump-House Structure

The pump-house structure was built entirely of precast reinforced-concrete sections, including pump floor and roof slabs. The walls consist of two cylindrical sections of the large diameter. The bottom panel of the door was louvered and a ventilator provided at the



Note the simplicity of the pump house, built of precast concrete sections.

roof to keep the air circulating in summer.

After completion of the unit, a pumping test was conducted, and a steady capacity of 1,900,000 gallons per day was pumped out with a stabilized drawdown of about 45 feet. Considering that the total available drawdown in the well is about 58 feet, the potential capacity of the unit is well in excess of 2,000,000 gallons per day. With the exception of seasonal fluctuations in water level, drawdowns in the well for given capacities are the same, indicating that there is virtually no change in the well efficiency.

The water quality, with the exception of slight hardness, is excellent. The water is absolutely clear, tasteless, and odorless and is chlorinated lightly to fulfill the State Board of Health requirements.

A. C. Bristol, division manager of the Thompsonville area, and D. W. Price, general engineer in the main offices of The Connecticut Light and Power Company in Waterbury, Conn., were instrumental in putting the Caisson-well project into reality. William H. Balke, Jr., division engineer, and the writer were in charge of supervision and construction details. The underground explorations and engineering designs were performed by Jordan S. Asketh, chief engineer of Caisson Wells, Inc. Construction was under the direction of Donald G. Beal, construction engineer of the same company.

60% Assessed Valuation Proposed for Alberta Cities

A BILL respecting cities," now under consideration by the 1951 Legislative Assembly of the Province of Alberta, provides for differential taxation of land and improvements in the ratio of 100% to 60% of assessed value.*

Sections 462, 463, and 464(1) of this proposed City Act read as follows:

SECTION 462. (1) Land shall be assessed at its fair actual value exclusive of the value of buildings and improvements thereon.

(2) In estimating the value of any land for assessment purposes no regard shall be had, nor consideration given to the price at which any land or lands owned by the city has or have been sold or offered for sale by the city to any person.

SECTION 463. (1) All buildings and improvements on land within a city, which are not exempt from assessment and taxation, shall be assessed at their fair actual value.

(2) A sum equal to 60% of the fair actual value of buildings and improvements shall be entered on the assessment roll and shall be deemed to be the assessed value of such buildings and improvements for purposes of taxation.

SECTION 464. (1) For the better determining of the value of a building or other improvement for assessment purposes, it is hereby declared that the cost thereof is only one of the matters which shall be considered in this connection, and if it is found that a building or other improvement, either because of its condition as to repair of of its inappropriate ness to its location or because of any other circumstances affecting its value increases the value of the land by less than the cost of the building of the cost of replacing it, such less sum shall be the amount of the assessment of the building.

* For statements as to present practice in differential taxation of land and buildings in four cities of Western Canada, see THE AMERICAN CITY for February 1951, pages 102-103. (Reprints available).

WAKE UP - NEW HAVEN!

WITH THIS slogan the Citizens' Committee for Council-Manager Charter (152 Temple Street, New Haven, Conn.) is running every Thursday night in the *New Haven Register* a "reader column" headed *Elm City Eagle*.

The purpose of the column is to arouse popular support for the effort now being made by many of New Haven's civic leaders to bring about the adoption of the council-manager form of government for that city.

In reply to an inquiry from THE AMERICAN CITY, James M. Osborn, vice-chairman of the Committee, writes:

We appear either on the amusement page or the page opposite, a position carefully chosen. The whole family has occasion to look at the theater page, whereas if we appeared on the woman's page, the sports page, or some other places, the coverage would be limited. There are no huge, black merchandise advertisements to make our column look small, since the theater advertisements are usually fairly limited in size.

From all indications the expense of running this column has been well justified. The style of "newspaperese" reaches an audience that would not read more formal writing. The column is written by John J. Casey, who had several years of training as a newspaper reporter before Yale University brought him into the Public Relations Department. Mr. Casey became interested in the council-manager plan while working as a reporter when he was covering debates between us and the ward politicians who oppose us.

The proof of what success we have with the column will be measured by the success we have this year in seeking to obtain a council-manager charter. Of course, we have to use car-cards in the buses, radio talks, and a number of other media of publicity.

How Watertown Battles The Elm-Leaf Beetle

FOR the past three years, Watertown has conducted a concentrated program of attack on the elm-leaf beetle. The most important feature of it has been the spraying that starts about the first of June. The spraying is performed under contract.

Before we started the work, we made a careful survey of every tree on the city streets and also those which overhang the street, so that they would be included in the spraying treatment. This work was done by a graduate forester in the employ of the Engineering Department. The diameter of various trees was noted. Those up to 6 inches were put in one class; from 6 to 20 inches in another, and those over 20 inches in a third. This allowed the contractor to bid more intelligently on the work.

Our next step was to adopt a schedule showing the concentration of elm trees throughout the city, by counting trees for each 100 feet of street. Using this schedule, we prepared a plan three years ago to show where the elms were, and where the beetle activity was. Each year since, a survey has been made to show how the beetle activity has extended. This year the entire city will probably be covered in spraying operations.

A majority of the owners of trees not included in our work arrange with the contractor each year to do their work, thus making an arrangement most satisfactory to all.

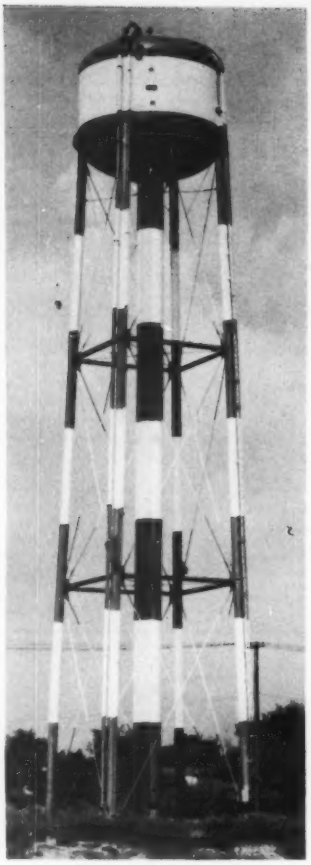
Each year we employ a registered tree expert to do whatever trimming, cabling, and cavity work that is needed on trees situated on our streets. We find that treating our trees each year rather than waiting for several years reduces the cost and gives us much better results.

C. LELAND WOOD
City Manager,
Waterown, N. Y.

A TV Show on Community Organization

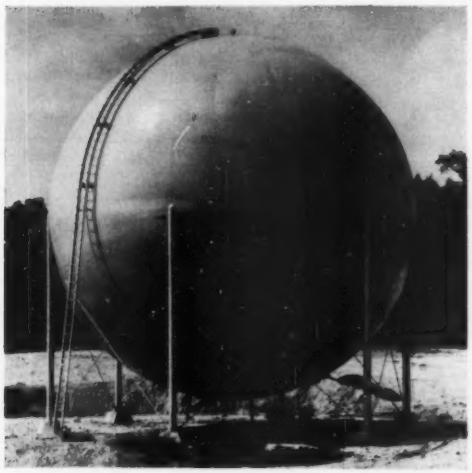
THE University of Oklahoma cooperates with WKY-TV in putting on a TV show each Sunday afternoon from 1:30 to 2:00 o'clock, presenting some phase of University activity and its part in the life of the state. These shows are under the direction of Dr. Sherman Lawton, Professor of Radio Speech. On February 18 the University's Institute of Community Development presented a program on community organization and planning. As part of the show, charts, graphs, neighborhood models, and other illustrative material enlivened the presentation.

Dr. Leonard Logan, Director of the Institute, reports that the responses received to this pioneer effort have been most favorable.



Six New Digesters

Lansing, Mich., with a station grinder for municipal garbage at the sewage-treatment plant, enlarges digester- and gas-utilization facilities. Value of digester gas is placed at 30 cents to 45 cents per 1,000 cubic feet



Gas utilization is important in Lansing. This Hortonsphere, above, stores excess digester gas and insures its effective utilization. Left: the 50,000-gallon elevated tank in which the plant maintains its own water supply.

By GLENN P. MANZ
Director of Public Service
Lansing, Mich.

LANSING likes to lay claim to the most sanitary refuse-collection service in the country. We collect can and all from each home, and leave a steam-cleaned can at the doorstep. We take the filled can to the sewage-treatment plant, dump the garbage into a station grinder so that it can be treated with the rest of the sewage, and steam the cans clean. While the handling of the garbage is of unquestioned sanitary excellence, it throws a definite load on the sewage plant.

We built the sewage- and garbage-treatment plant during 1937-8. In March 1949 we started construction on additions and improvements to it. The work will be completed in 1952. The improvements will give us more than adequate garbage-sewage capacity, and will allow us to capitalize on the digester gas produced.

The original plant was designed for a flow of 9 mgd. This capacity was exceeded early in the war, and maximum flows as high as 15 mgd have been handled by the plant since that time.

The remodeled plant is designed for 20 mgd. It will be capable of passing 40 mgd with partial treatment through the primary settling tanks, and 30 mgd through the secondary process consisting of aeration tanks and final tanks. The Hortonsphere, built by the Chicago Bridge and Iron Company with the appurtenant improvements, supplements the original 25,000-cubic-foot gas holder used for storing the sewage gas. The Hortonsphere was selected because we believed it would provide cheaper storage for the amount of gas to be held, would occupy less space, and offer fewer problems in the way of maintaining the water seal.

The four digesters built with the original plant had a total capacity of 294,000 cubic feet. These have functioned with a fair degree of satisfaction in spite of the heavy load of sludge which comes to them, but the increased sewage flow and the pumping of ground garbage into these digesters showed that a large increase in the digesters' capacity was needed.

The new plant adds six new digesters with a capacity of 1,088,000 cubic feet, for a total of 1,382,000 cubic feet. The gas production during the first year of operation of the plant was about 100,000 cubic feet per day, but after ground garbage was added to the digesters the production almost trebled, and during 1949 it averaged 250,000 cubic feet per day with maximums of almost 280,000 during the canning season in September and October.

In the original plant, gas was used for fuel for a 240-hp engine, driving a blower for aeration purposes. Gas was also used to heat the entire plant, to heat water for washing the cans in

which garbage was brought to the plant, and to dry the sludge in a rabble-arm type of furnace. These two latter units were arranged for coal-firing and oil-firing, respectively, but it was found that there was sufficient gas for these units. In the modified plant two new gas-diesel-engine-driven blowers will be installed using gas as the main fuel, and oil as the auxiliary or standby fuel. Gas will also be used for the additional heating load in the new building—in a proposed new incinerator, and in a new boiler for heating wash water for the garbage cans.

The four original digesters are fixed-cover digesters with Dorr Company Type K mechanisms in the tanks. These mechanisms keep the sludge mixed and assist in the removal of the digested sludge. The six new digesters have dome roofs. The walls and roofs of these tanks are constructed of pre-stressed concrete, and were built by the Preload Corporation. The digesters operate at a temperature of about 95° F. The present digesters are heated by jacket-water from the present sludge-gas engine. The water is circulated through coils in the tanks themselves. In the new plant, sludge will be heated externally by the jacket-water from the engine or by means of gas- or oil-fired heaters.

Gas production by the digesters has a very decided cyclical characteristic, due, for the most part, to the weekly variation in the quantity of solids received at the plant. Weekend flow is much less than the flow for the other five days of the week. The maximum garbage received at the plant occurs on Monday, with the minimum on Saturday, and none on Sunday. Minimum gas production occurs on Sunday and builds up to a peak on Tuesday, indicating a lag of 24 to 36 hours between the addition of garbage to the digesters and its effect in gas production.

We have made no figures which show the over-all savings, which result from the utilization of sewage gas and the pay-out time for the equipment required to utilize the gas, but studies were made in 1948, showing a comparison of the various uses to which sewage gas is put. This study showed that with fuel oil 10 cents a gallon, gas to replace this fuel oil would be worth 45.7 cents per 1,000 cubic feet; gas used to replace purchased power at 1.25 cents per kw-hr. would be worth 41.7 cents per 1,000 cubic feet; as a replacement for coal at $12, gas would be worth 30 cents per 1,000 cubic feet. The study indicates that the best use to which gas can be placed, under the fuel prices used, is as a replacement for fuel oil in the incinerator, which, in the original plant, was the only equipment which could make use of fuel oil. The next best use for gas is in the gas engine to replace purchased power, and as a last resort, gas could be used in the coal-fired boiler used for heating water for washing the garbage cans.

Plant Water Supply

State Health Department requirements of sewage plants in Michigan are that two separate water systems be available in the plant. One system, known as the service-water system, must be supplied from a pure-water source and is used throughout the plant for flushing out the sewage and sludge lines, for water seals to sewage and sludge pumps, and for hose bibs around the plant which are used for washing down floors, or flushing down tanks and washing their walls. The second water system, known as the potable supply, is connected to a pure-water source and is used only in drinking fountains, wash bowls, showers, toilets, and the laboratory table, where no possible contamination can work its way back into the supply system and into the city water main, which is the source of supply to both the systems.

The elevated tank, also built by Chicago Bridge and Iron Company, is the supply for the service-water system. The supply pipe to the tank comes from the city water mains, up one of the tank legs, and discharges into the tank above the overflow level. The supply pipe to the tank is controlled by an altitude valve with a self-draining feature so that the supply pipe will drain in winter and not freeze up, exposed as it is, on the tank leg. With this system, it is possible that the service-water supply line or even a sewage tank might find its way into the system and into the tank, but because of the break in the supply pipe above the surface of the water in the tank, none of this contamination could ever find its way back into the city distribution system. Approximately 75,000 gpd of water are used at the plant during the winter, and the use may reach 100,000 gpd in the summer. As stated above, the tank is supplied from the city water system. A booster pump has been provided, however, so that when the pressure in the distribution system is low, the tank can be filled by this booster pump.

The operation of the original gas holder and the new Hortonsphere are complementary to each other. It was evident from the start that the gas holder is a good indication of the relationship between gas production and gas use in the plant. When the gas holder is in its high position, it indicates that gas is being produced faster than it is used. When the gas holder is in its low position, it indicates that the plant use of gas has been greater than its production. By an ingenious system of photoelectric cells, whose light rays are obstructed by a vertical plate attached to the movable portion of the gas holder, gas is pumped into the sphere when there is an excess and bled out of the sphere when the production is less than the demand.

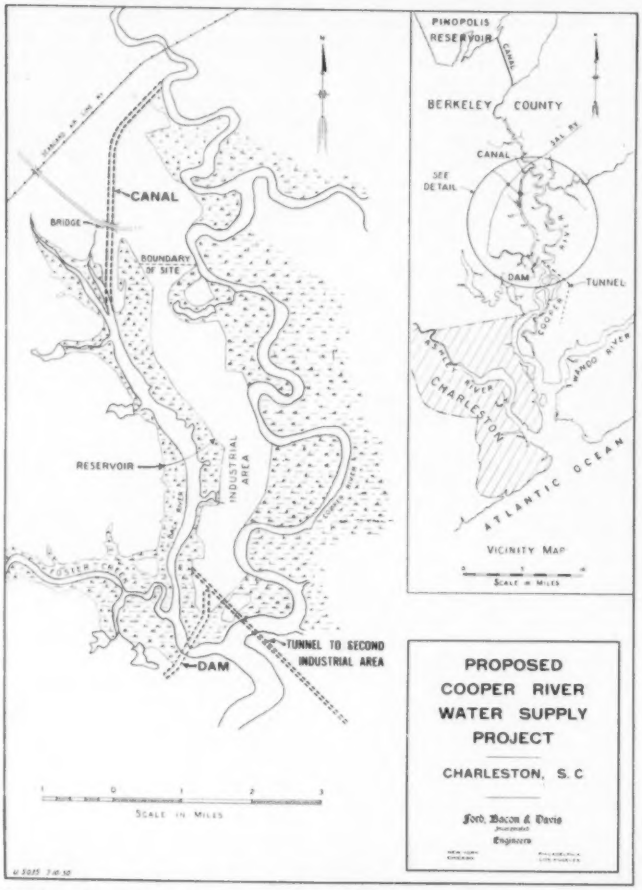
Thus, with the new improvement to our plant, we expect to keep a firm claim to the title of "the most sanitary garbage-collection system in the country," and at the same time make the most out of all this digester gas that the added solids provide.

A view of the plant taken during its construction. In the foreground are four new final-settling tanks; at left, the partially completed aeration basins. Note the Hortonsphere and water-supply tank in the background.

CHARLESTON, S. C., BUILDS

Industrial Water Supply

Ten billion gallons of water made available by changing the course of the Cooper River



Note how the canal will tap the fresh water of the Cooper River, feeding it to Back River tributary. The dam will make Back River a fresh-water reservoir.

POSITIVE PROOF that the rich tradition of the South can live side by side with the power of modern industry is coming out of Charleston, S. C. And it is coming in the form of the largest industrial water-supply project on the East or Gulf Coast, one that is coming into being through the best and most typical of United States' engineering thought today.

Charleston's recent industrial growth; including the new $12,000,000 alpha-pulp plant of the West Virginia Pulp & Paper Company which requires 20,000,000 gpd in its initial operations; the new plant of United Piece Dye Works requiring 4,000,000 gpd, now under construction; plus a 50% increase in population for the area served by Charleston's water system, will use nearly all its present water supply.

Other big water-using industries, also, have been looking toward Charleston with its deep-water harbor, ample power supply, and large pool of labor. The chemical, textile, rubber, and even the steel industry with its interest in South American iron ores have investigated the area. Few coastal ports can accommodate a steel mill which requires 75 to 80 tons of water to make a ton of ingot steel, and whose fabrication requires another 175 tons. Although Charleston's present source of water, the Edisto River, is excellent in quality, it is limited in amount and is too far away.

Prior Water History Precedent Breaking

In fact, the Edisto water supply Charleston now has represents an exciting chapter in water-works history. To get it, the city drew on the resourcefulness of its then Manager-Engineer of Public Works, the late J. E. Gibson, who pushed a 7-foot diameter tunnel 23 miles long through the Cooper marl to tap the Edisto River. The unusual feature of the project was that, against the advice of many engineers, he cut through the Cooper marl without lining it. The Cooper marl is a relatively soft stone that hardens when exposed to air. Few, except Mr. Gibson and his assistant (later his successor), F. B. McDowell, Jr., believed that this tunnel would stand up against the scouring action of the water. But it has, as they knew it would.

Water Available

And so, if Charleston was to reach its full industrial potential, much more water had to be developed, and the tantalizing fact was—that the water was there. Back in 1933, South Carolina built the Santee-Cooper dam and hydroelectric plant. This project, through two dams, impounds some 800,000,000,000 gallons of water, larger by 60% than the vaunted Delaware River project now under consideration in the New York-Philadelphia area.

Charleston began flexing its industrial muscles during World War II when its navy yard with a ship-construction program went into greater action than it ever had before. But when the

By ARTHUR M. FIELD
Chief Engineer
Charleston Development Board
Charleston, S. C.

war ended, the industry ended also. And it was then that the city recognized its responsibility as an industrial area by forming an Industrial Development Board that had as its purpose the creation of industry in Charleston to take the place of the navy yard activity.

But industry would not come unless it had water. And to get that water was the challenge.

Will Divert Cooper River

The Industrial Board is now meeting the challenge by diverting a part of the flow of the Cooper River into Back River. This smaller stream runs parallel to the Cooper, virtually at the upper reaches of Charleston harbor. The water is diverted from the Cooper at a point 8 river miles above the highest point of salt intrusion from the harbor into the Cooper River; and where Back River enters the Cooper at the upper end of the Charleston harbor, an earth-filled dam or dyke is to be built across Back River, turning it from a river into a huge fresh-water reservoir.

The Cooper River has an average daily flow of 10,000,000,000 gpd diverted from the Santee River through the hydroelectric plant 30 miles above the harbor, and of this amount, 2,500,000,000 gallons will be immediately available for industrial and other uses, and this can be expanded to use the full 10,000,000,000 gpd at a later date if necessary.

The interesting feature of this project is its very low cost. Only $4,500,000 will be required for the canal and dam, and none of this construction will require critical materials. The dam will be built on a foundation of marl rock about 25 feet below the surface of the water, and no spillway will be required for the reason that any excess water not required can flow out of the diversion canal as well as in.

The Back River reservoir will have a storage capacity of 4,000,000,000 gallons, and the canal can be built by simple dredging with no rock to be encountered. The flow from the Cooper into the reservoir will be controlled by the effect of tides so that there will be a constant movement in and out of the reservoir through the diversion canal. Some silting is anticipated, but not in an excessive amount, and this silt can be well used for filling certain areas of low land abutting the reservoir and making additional industrial sites.

Ford, Bacon & Davis are engineers for the project, and detailed plans, specifications, and estimates of cost will be started very shortly.

The water, which is soft and comparatively free of turbidity, will be available to industry in almost unlimited quantities at rates of less than $10.00 per mg, and of further interest to industry is the fact that when used for processing or cooling, the waste effluent can be disposed of into the brackish harbor with little or no treatment.

Long Beach Gets New State College Through Community Action

THERE will be a new State College permanently established in Long Beach, Calif., as a result of an all-out effort on the part of the community during the past year. Final action to assure this major addition to the cultural and educational life of the city will be taken early this year when the city dedicates to the State of California a 330-acre site for the establishment of the institution. In January 1949, a bill was passed by the State Legislature authorizing the establishment of one of three proposed new state colleges in the southeast Los Angeles and Orange County areas. Even before the final site was chosen, Long Beach was successful in getting the college underway in temporary quarters provided within the city by a local subdivider. Classes were convened for the first time in the fall of 1949, and 160 students registered.

The most conclusive evidence, however, of the city's strong desire for the location of the college in Long Beach developed when it became apparent that the location problem would be simplified if Long Beach were to acquire and dedicate to the state the necessary land. The final site selected, near the Veterans Administration Hospital, is a highly desirable one. An amendment to the City Charter authorizing this acquisition and dedication was needed, after the state approved the proposal. The vote on June 6, 1950, was overwhelmingly in favor and, accordingly, negotiations have recently been completed for the acquisition. A total of $997,500 was paid to the three former owners as a result of negotiations conducted on the basis of careful appraisals.

At the present there are 975 students enrolled at the school in its temporary location. It has now been renamed The Long Beach State College. Plans are being made to accommodate, in additional temporary quarters, 1,500 students. In the meantime, development of the permanent site is under way, and it is expected that Long Beach State College will serve an enrollment of at least 5,000 students. The sum of $3,625,000 has been appropriated initially, and an architect has been retained for developing a master plan. Construction is expected to start this year.

SAMUEL E. VICKERS
City Manager
Long Beach, Calif.

Fixed Age for Compulsory Retirement Deplored

To the Editor of THE AMERICAN CITY:

For many years I have felt that a fixed age for retirement was unrealistic. This realization came about as a matter of personal experience within my own family, and through observation of a long-established pension system in the railroad industry as it affected the citizens in Escanaba, Mich. It appears that the average American becomes so closely associated with his job in long years of service that if he is arbitrarily separated from it, regardless of the economic incentives, there is a marked letdown in his interest in life, and in many instances physical deterioration follows.

Part of the answer may be in encouraging private hobbies; but, fortunately for the country, many people think of their jobs as their major interest and activity and thus have serious dislocations when separated from their work. Since I have come to these conclusions I have always been as lenient as the rules would permit in the administration of a retirement system with which I have been affiliated. I feel, however, that that is only a partial answer. There should be encouragement of hobbies, and some way should be worked out to permit a continued affiliation with a group so that the personal satisfactions of association with fellow-workers could be maintained where desired.

This is not an easy problem, and in governmental work it may be more difficult to find a solution because continued association may be a direct burden on the taxpaying public. I do think that governmental jurisdictions at present, whether they have retirement plans or not, are generally more generous in this respect than private industry, but I have no statistical background for justification of this statement.

GEORGE E. BEAN
City Manager
Grand Rapids, Mich.

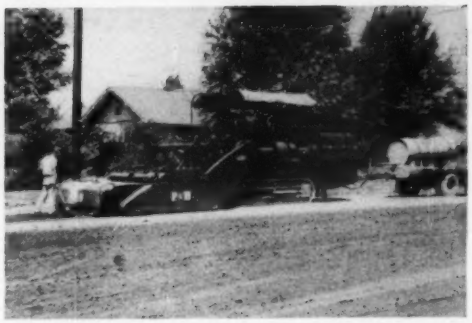
P.A.C.H. Opens New Office

TO SERVE its expanded program in international administration, the Public Administration Clearing House has opened an office in New York City at 45 East 65th Street. This office is under the supervision of Dr. Rowland Egger, Associate Director of the Clearing House, who is well known to many municipal officials for his long-time interests in local government.

How Booneville, Ark., built

Soil-Cement Streets

Comprehensive study shows them durable and their cost to be within the municipal budget



A single-pass traveling machine is mixing soil cement and water on one of the Booneville (Ark.) streets.

By MAX A. MEHLBURGER
Consulting Engineer
Little Rock, Ark.

IN 1946, when the citizens of Booneville, Ark., decided to pave their streets, they launched upon the first city-wide paving program to be undertaken in the state for many years. Interested citizens first held a meeting and discussed types of pavements and approximate costs. The result was the formation of a street-improvement district of practically city-wide extent by petition of the property owners. H. B. Griffey, W. R. Allen, and O. A. Skinner were selected as commissioners to administer the work in accordance with Arkansas statutes. The attorney and engineer were named, and the paving program was under way.

In Arkansas, most city paving projects are financed by the sale of special assessment bonds which are a lien upon the property within the district. The amount of bonds which may be issued has, up until 1949, been limited to 40% of the total assessed valuation of the property within the district. This makes financing difficult in most small towns because of low assessments. This fact has been largely responsible for the failure of many towns to initiate and carry out badly needed paving projects.

Booneville An Example

Booneville is an excellent example of this. It has a population of 2,500 and is primarily an agricultural community. There are no factories or other properties with high physical values to boost the total assessed value of the district. The great majority of the streets in the district are residential, serving property with moderate valuations. For this reason, an expensive type of pavement was out of the question.

Several moderate-cost types of pavement were investigated and considered. For reasons that will be explained later, the final choice was made in favor of a 6-inch, soil-cement base with double-seal-coat wearing surface. The choice was made by the commissioners and ourselves on the basis of initial cost, annual maintenance, and durability.

In order to observe the pavement under traffic conditions, we made a trip to Madison County, Tenn., where extensive yardage of soil cement had been laid on soils similar to those at Booneville. We inspected the base during winter. The base had been placed during the summer before, and turned over to traffic without the surface course, to allow any weak spots to develop. We were pleasantly surprised to find this base course in excellent condition after about a year of traffic and weathering. At the time of our inspection, the county was making preparations to place the asphalt riding surface. There were no corrugations, ripples, edge failures, or chuckholes. The slab retained its original grade and cross-section. The traffic and an intense winter had no apparent effect.

We then inspected other soil-cement roads, this time in the company of the commission. Alexandria, La., has for many years been using soil-cement base extensively in its paving program. Surface courses have varied from single surface treatment to a 1½-inch or 2-inch hot asphaltic top. Soule Butler, Alexandria's City Engineer, reported a most satisfactory experience with it.

En route to Alexandria, we also inspected a section of soil-cement-base highway on Route 71 south of Texarkana, Ark. This route was built in 1942 and carries some extremely heavy traffic, both in volume and loads. The pavement was closely examined and the distinctive pattern of contraction cracks was noted. There was no displacement of slab and no chuckholes, and the riding surface was very good in spite of the heavy loads. The commissioners were very favorably impressed, and expressed the opinion that if their project would turn out to be equally good they would be well satisfied.

Arriving at Alexandria, we went over many miles of city streets of all types. Soil-cement streets 12 years old were examined and compared with streets recently placed, and we were pleased to find very little evidence of wear or distress. Most of their recent paving has been done using curb and gutter, catch basins, and storm-sewer construction. We were impressed with the manner in which the base was processed by the heavy machinery around the radial curb-and-gutter sections at the intersections. We were also impressed by the fact that even though the soil-cement base "hair-cracks" in a definite pattern, there was no displacement upwards or downwards of the slab which would affect the smooth riding surface of the pavement. Also, there was no apparent bad effect on the slab from either surface or subsurface water entering the cracks. In most instances, the mastic top had again partially or wholly closed the surface of these cracks, but if water did enter them, it was apparently not detrimental to the base slab.

Confidence in Soil-Cement

Each contact with projects using this type of base served to strengthen our confidence in soil cement. The commissioners were also more convinced that their selection was good. Accordingly, plans and specifications were completed and bids taken on March 18, 1949. Davies and Davies, municipal contractors, of Little Rock, were low with a bid of $143,577. Due to some delay occasioned by complaints against assessments by a few property owners, work on the project was delayed until April 1950.

After the necessary amount of drainage, culvert, and grading work had been completed by the contractor, equipment was brought in to start processing the soils. The soils had previously been tested for cement content necessary for stabilization. N. B. Albright was resident engineer on the project.

Cement stabilization followed a definite routine; namely, scarifying the previously graded roadbed to a 6-inch depth for the required pavement width, spreading the predetermined amount of cement by means of a bu.. cement spreader, and processing with a P & H Single Pass stabilizer, with water being added during processing through noz-

zles in the mixing box. The mixed materials leave the mixing box in a uniform loose and moist condition, ready for packing operations. All rocks over 3 inches are removed either in the scarifying operation or after the processing plant moves on.

Initial compaction was done with a sheep's-foot roller, after which the motor grader shaped the roadbed to grade and crown. A spike-tooth harrow then removed all surface-compaction planes, the loosened material next being packed and bonded to the base with pneumatic-tired rollers. After this "rolling out" procedure, the completed soil-cement base was sealed with an emulsified asphalt to prevent moisture evaporation during cement hydration.

Seven days were required for curing of the base before traffic was allowed to travel the street. No top was laid until all the base had been prepared. While the base was exposed to weather and traffic, we inspected constantly for evidence of weak spots of distressed areas. Only two sections, several feet in length, in the entire 8 miles were dug out and the material replaced.

Strength Proved

As all manholes had been lowered to allow for passing of the processing plant, it was necessary to remove the soil-cement material over each manhole with jackhammers. This procedure alone proved to everyone's satisfaction the strength of this material—only two weeks old. All local grumbling by the "sidewalk superintendents" as to the strength of this soil cement was quickly dissipated. Needless to say, our own confidence in this particular soil-cement project was justified.

After the surface was placed in September, the final inspection was made, on October 16, 1950, with the contractor and commissioners. As we toured and inspected the streets block by block, many property owners along the way expressed their approval of the work.

Contractor's Estimate of Total Cost of Project

Item	*Quantity*	*Unit*	*Unit Price*	*Amount*
Earth fill				$ 4,870
All drainage work and storm sewer				14,690
Curb and gutter	2,341	L. F.	$ 1.50	3,512
Grading roadbed	422	Sta.	25.00	10,540
Processing base	101,534	S. Y.	.40	40,614
Cement	11,897	Bbls.	3.90	46,398
Asphalt	66,182	Gal.	.17	11,251
Mineral aggregate	2,433	Tons	5.00	12,165
Total bid				$144,040
Engineering, legal, administrative, and miscellaneous				13,710
Total project cost				$157,750

The commissioners and city officials have had numerous requests about this type of pavement from other interested towns, and have been hosts to visiting delegations on inspection trips, both during and after paving operations.

The project contained 113 blocks, or 8 miles. Most of the new pavement placed was 20 feet wide, without curb or gutter, using ditches on the side for drainage. There were, in addition, 11 blocks, 30 feet wide. Three blocks in the business district were 60 feet wide, using conventional curb and gutter with storm-sewer drainage facilities. These wide streets were some of the most attractive in the project. It required six passes of the stabilizer to process the base for this width.

The base was first prepared to grade and cross-section by careful blading to blue-top stakes set across the street at regular intervals. Subsequent processing longitudinally maintained the cross-section as prepared and when finally completed, the street had an excellent crown and appearance.

The total cost of the project is shown above in a condensed statement of the final contractor's payment estimate.

We have also compiled certain average unit costs which might be of interest to those contemplating the use of this type of pavements in like projects.

Average Unit Costs

Over-all costs per sq. yd. of pavement (including overhead)	$1.554
Cost per sq. yd. of grading	0.11
Cost per sq. yd. of soil-cement base	0.85
Cost per sq. yd. of surfacing	0.231
Cement in base bbls. per sq. yd.	0.117
Cost of cement in base per sq. yd.	0.456
Asphalt in top gal. per sq. yd.	0.652
Cost of asphalt in top per sq. yd.	0.111
Mineral agg. in top lbs. per sq. yd.	47.9
Cost of mineral aggregate in top	0.12

The over-all cost to the property owners was very reasonable. Below are listed some approximate costs for various widths of pavement. These refer to an average, standard 50-foot front lot.

Annual assessment of benefit for 20-foot pavement, $11.50

Annual assessment of benefit for 30-foot pavement, $16.25

The approximate over-all front-foot costs not including interest and bond margin were:

20-foot pavement, $2.33
30-foot pavement, $3.37
60-foot pavement, $8.21

The bond issue was for 16 years, but with collections at the above rates, the issue will be retired in about 12 years.

Third Street, before grading and paving operations.

Third Street,, after soil-cement paving was completed.

Water Coagulation

Or, how to save wear and tear on the filters

SOME TIME AGO, the observation was made at an engineering meeting that water treatment was a curious contradiction. The engineer goes to great and detailed trouble to design and build a set of filters, and then the operator bends every effort to keep from using it.

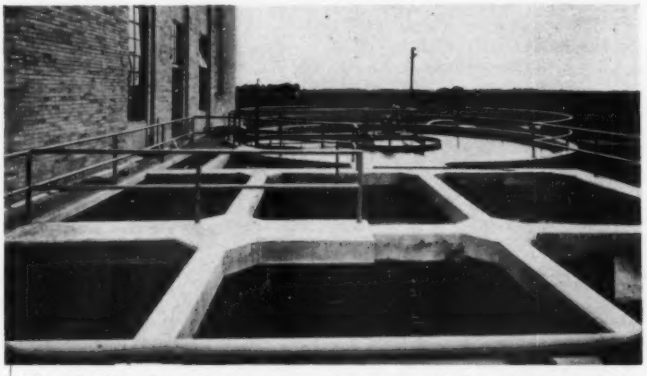
Actually, the engineer and the operator are not working at cross purposes. While the engineer does spend much time and studious effort laying out the filter beds, equipping them with automatic controls, surface washes, and specially selected filter media and underdrains, he will, at the same time, spend as much and more time designing the chemical-feeding arrangement, the coagulation, and settling basins so that the water can drop its impurities before it reaches the filters. All efforts seem aimed at the infrequent use of a substantial capitalized portion of the plant —the filters.

Filters Are Strainers

But most engineers accept this as wise. No longer do we expect the filters to be a host for biological slimes that exert their purifying action on top of the filter sand. Now we expect the filters to be only a final strainer that sifts off an elusive last particle that may have slipped over the weir of the settling tank into the channel leading to the filters. At most, the designers would not like much more than 10 ppm of the coagulated floc to escape and be strained away on the filters. Many are able to reduce turbidity to 2 ppm before filtering.

To make this possible, two factors must be favorable. First, the water must have a coagulant that will produce a good, quick-settling floc. The second is that the coagulant must be allowed to react and settle in basins that will allow the floc and the sediment that it traps to separate from the water.

The literature seems to be full of advice on settling-basin design. Today, the designer can avoid the dangers of short circuiting; he can prevent excessive upflow currents at the effluent weirs that might carry away the settled sludge, and he should be able to give ample time for the particles to settle out of the water. Thus, the operator should have on his hands only the management of the coagulant so that a good floc will be produced.



Upflow clarifiers depend on the proper functioning of the coagulating chemicals. This is an Infilco Accelator at the Marshall (Mo.) treatment plant.

If the water remained the same, the operator's problems would be simple. But filter plants draw from surface supplies. Sometimes the streams are muddy. Sometimes they are clear. Sometimes the water is warmed by a midsummer sun. Sometimes it is winter chilled. The same coagulant dosage, or even the same coagulant type, responds differently under these conditions.

We have some guidance on the way floc forms, which is based on studies by Camp, Root and Bhoota.* Apparently the first step in the formation of alum and iron flocs consists of the coagulation of the negatively charged colloidal impurities by the positively charged trivalent alum or ferric ions. Next, colloidal floc particles form and increase to form larger particles until they reach a size the mass of which prevents further Brownian movement. The third phase is that of bringing the particles together by the mechanical action imparted to the water.

As was just mentioned, if the operators had a standard water, they could standardize their coagulating problems. But they do not. The study just mentioned notes that at 80° F. water has about double the kinetic velocity of water near the freezing point, therefore the speed of coagulation will be appreciably faster.

Alum, the most universally used coagulant, produces a light floc useful in a wide range of waters. However, it apparently has the characteristic of often forming a "fragile" floc hard to settle in cold waters. Great attention has been directed to the character of the floc itself and less to the medium in which it forms. Obviously, in cold water the floc will have to form in a more stickly, viscous water, and even were the floc structure of the same strength, it would break down more readily when it is subjected to this denser water. One would logically expect the floc to settle less rapidly in water whose density has increased by lowering of the temperature.

The next most popular coagulants are the iron salts. While these do not apparently go into solution as readily as alum, they seem to produce a floc that is heavier, and thus able to settle more quickly. Here and there we find operators who like to use the iron salts in cold weather and alum in warm. Obviously, if by nature the floc is

THE AMERICAN CITY gratefully acknowledges the assistance, in the preparation of this discussion, of: J. R. Baylis, Engineer of Water Purification, Department of Public Works, Chicago, Ill.; Dr. A. P. Black, Department of Chemistry, University of Florida, Gainesville, Fla.; A. W. Rumsey, Chemist, Board of Public Works, Kansas City, Kans.; E. E. Smith, General Superintendent, Water Department, Lima, Ohio; A. B. Middleton, Piladelphia Quartz Co., Philadelphia, Pa.

* *Effects of Temperature on Rate of Floc Formation*, by T. R. Camp, D. A. Root, and B. V. Bhoota, J. I. I.W.W.A. vol. 32: 1913 (1940).

heavier, it can overcome the denser water produced by cold weather than can alum. Its nature, whether in cold or hot water, makes it better adapted to these rougher conditions, even though its ability to react is not so great.

However, in recent years a new product has appeared in the water-works picture that in effect strengthens the floc, whether it is formed from alum or iron salts. This product is frequently known as "activated silica." It is formed by combining silicate of soda with some chemical such as ammonium sulphate, alum, chlorine, sodium bicarbonate, carbon dioxide, or sulphuric acid. Its use provides a tough, rapid-settling floc that is strong enough to resist the various changes in water character in better shape than the floc formed by alum or iron salts alone.

J. R. Baylis, Engineer of Water Purification in Chicago's Bureau of Engineering, is one of the pioneers in this development. Two others are August V. Graf, Chief Chemical Engineer, and William B. Schworm, Senior Chemical Engineer, of the St. Louis, Mo., Water Division. The work in both Chicago and St. Louis was in progress at about the same time.

Cold Water Coagulation

When Chicago undertook the task of filtering Lake Michigan water, Mr. Baylis realized that he would have a cold water to handle without many impurities in it. He also recognized the designer's aim that we spoke of previously—that of reducing the burden on the filter beds as much as possible. So confident were the designers that they could do this, that they increased the rate of filtering from the conventional 2 gallons per square foot per minute to more than three.

This obviously could be done with safety if the settling tanks performed as they should. Consequently, Mr. Baylis experimented for many years with a silica filter aid and turned up with a combination that has been able to work well with the cold Lake Michigan waters.

The increased weight of the floc when reinforced with activated silica makes it particularly useful in the upflow types of coagulation and settling basins. There are several of these, all well known. Their principle is predicated on the theory that the water and the chemicals should be flash mixed and allowed to flow upward through a "sludge blanket" that will aid in the formation of the floc, and out of the blanket into the effluent weirs. The weight of the floc forms the sludge blanket, and if that weight can be increased, the line of demarcation between the water and the sludge will be definite. Light flocs cannot hold the blanket line as well and often break through to carry floc over to the filters. Hence, the added strength that the silica provides to the floc particles helps the operation of these basins.

The use of the silica filter aid is not restricted to filter plants for clarification alone. Based upon research work done by water chemists of the City of Miami, it has found increasing acceptance in softening plants, not only in Florida but throughout the country. The City of Fort Lauderdale was the first city to use silicate activated by ammonium sulfate. In this plant a dosage of 4 ppm of activated silica is the sole coagulant, and replaced a dosage of 4 grains per gallon of alum at a very substantial saving. At Orlando, Fla., silica is activated by liquid chlorine. In the new 80 mgd Southwest Plant of the City of Miami, the first units of which are now nearing completion, silicate activated by carbon dioxide derived from diesel exhaust will be the sole coagulant used. When activated silica is used in connection with softening with lime or lime and soda ash, the sludge agglomerates into large leathery flocs which settle well and are not broken up by high velocities which are sometimes present.

Points of Application

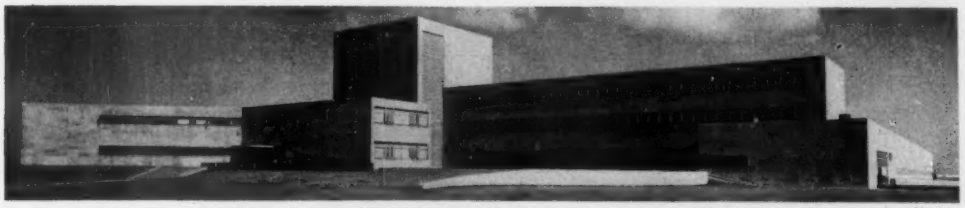
We learn that for low-turbidity waters it is preferable to introduce the activated silica into the raw water sufficiently early to permit complete distribution ahead of the alum flash mixer. With waters of greater turbidity, a reverse order of chemical feeding seemed the better practice. To work well, therefore, a plant ought to have a flexible chemical feeding arrangement that will allow either.

The city of Lima, Ohio, for a number of years used a diluted solution of sodium silicate, injected simultaneously with the alum to the raw water prior to its reaching the mixing chambers. The rate of application was approximately one part silicate to three or four parts 5% aluminum sulphate. E. E. Smith, General Superintendent, reported that his dosage of aluminum sulphate was reduced from 2 grains per gallon to 1 grain per gallon with about ¼ grain per gallon of sodium silicate. When the Lima water was softened with lime and soda ash in 1947, the use of the silicate was abandoned.

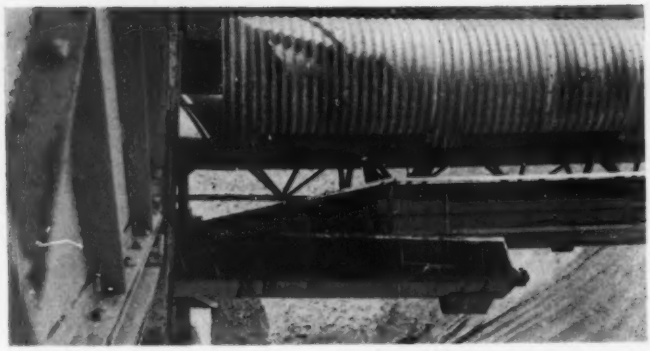
Kansas City, Kans., also uses activated silica. A. W. Rumsey, Chemist for the Board of Public Utilities, reports the use of the silica sol known as Baylis sol, which is commercial silica diluted and neutralized to 85% neutrality with sulphuric acid. After an aging, the sol is further diluted and is ready for use. After a number of laboratory experiments, he began using activated silica in February 1945. Since that time, he has used it during all periods of significant turbidity. In 1950, silica treatment was used on 350 days. The maximum usage was 2.0 ppm and the average usage was 1.1 ppm, both as SiO_2. His opinion is that the use of the activated silica sol has allowed a reduction of the alum required by 10 ppm, and at the same time has produced a clearer settled water.

From this discussion, one can see that there will be less work for the filters if there is more attention to the mixing and settling action in the plant. It seems logical that the change in character of the water has the greatest bearing on the action of the coagulants, because of the greater density and increased viscosity of the colder water.

Some adjustment can be made by selective use of the proper coagulant in some cases, and by the use of activated silica in others. In each case, the settling basins should be able to receive the bulk of the sediment that the raw water contains, and to make unnecessary further loadings on the filters.



In the new Chicago South District filter plant, the nation's largest, much development work on activated silica took place.



This shows a view of the screw conveyor in the mixer trough. Note in the plant end of the trough, the spray-bar pipe which adds the bitumen coating.

Pre-Treated Aggregate

improves street-surfacing operations

By ROBERT C. LEWIS
Senior Engineer
Division of Highway Maintenance
Cincinnati, Ohio

ECONOMICAL maintenance of Cincinnati's street pavements, many of which are obsolescent, has required an extensive surface-treatment program in recent years. Of the approximately 800 miles of paved streets in Cincinnati, 397 miles, or nearly 7,000,000 square yards, have bituminous surfaces. This total includes not only bituminous-macadam and sheet-asphalt pavements, but extensive areas of asphaltic concrete with which many old pavements of all types have been resurfaced.

Surface treatment in Cincinnati consists of applying a seal coat of liquid bitumen, such as rapid-setting asphalt emulsion RS-2, medium-curing asphalt MC-5, or rapid-curing tar RT-8, covered with aggregate consisting of 3/8 inches (#6) of crushed stone or slag, or 1/4 inches of uncrushed pebbles. Selection of bitumen depends upon the type and condition of pavement, emulsions being used most extensively. The crushed aggregate cover is used on arterial and hilly pavements, and the uncrushed pebbles on the more level secondary and residential streets. Surface-treatment life, of course, varies with traffic, weather, and drainage conditions, from three to eight years, six years being the anticipated average life. On the basis of covering 7,000,000 square yards of bituminous pavement every six years, we plan to surface treat a little over 1,000,000 square yards per year.

While we and our citizens have been generally satisfied with the effectiveness of surface treatment as a maintenance operation, we have been very much concerned with the dust resulting from surface treatment as well as the considerable cost of removing loose aggregate. We had experimented with methods of dust-proofing aggregate prior to 1950, but the greater part of our cover aggregate was untreated. To reduce the dust nuisance from untreated aggregate we wet all pavements within 24 hours of surface treatment, and give them thorough power flushing 48 hours later, after which the gutters are mechanically broomed.

Before adoption of an aggregate treatment program, we asked 30 representative cities to answer a questionnaire regarding their surface-treatment operations. Of all of the cities responding to the questionnaire, only two replied that they were treating cover aggregate to reduce dust resulting from surface treatment. One city reported that it pretreated aggregate with MC-2 asphalt and the other stated that it applied a fog-coat of liquid asphalt over the aggregate after it had been placed.

Laboratory Test Planned

In view of the reports of other cities, as well as our own early experience, we decided against the fog-coating of the cover aggregate after placing because of the additional equipment involved, the added inconvenience to traffic, and the continued necessity of cleaning up loose aggregate. Accordingly, we investigated pretreatment of aggregate by having a local testing engineer prepare a series of mixes consisting of local aggregates, both wet and dry, treated with varying proportions of common liquid bitumens and report on the combinations apparently best suited for pretreating surface-treatment aggregate.

Both dry and wet aggregate samples were treated. Aggregates consisted of crushed and uncrushed gravel with the following average gradations:

	Per Cent Uncrushed	*Per Cent Crushed*
Retained on 3/8-inch screen	0.7	17.1
Retained on No. 4 sieve	42.2	57.0
Passing No. 4 sieve	57.1	25.9

Bitumens used to coat stones were asphalt 85-100 penetration, MC-1, MC-2, MC-3, SC-2, MS-2, RS-2, RS-3, SS-1. Percentages of bitumen applied were 1/2%, 1%, and 1 1/2% by weight for each bitumen and each stone sample.

The conclusions drawn from these tests were that MC-1 and MC-2 on either dry or wet aggregate appeared most satisfactory.

Our next step was to check the results of the laboratory tests by actually surface treating a representative street shortly ahead of the 1950 work season. Four types of crushed cover aggregate were processed, as follows, for this trial at our municipal asphalt plant: 1% MC-2, 1 1/2% MC-2, 1% No. 2 fuel oil, dried but untreated. After an application of .25 gallons per square yard of RS-2 asphalt emulsion, one-fourth of the street surface was covered with each of the above aggregates. The cover was "set" by means of an 8-ton tandem steel-wheeled roller, which crushed about 5% of the aggregate. In spite of this, the aggregate treated with MC-2 was noticeably less dusty than the other two types. Our observation revealed that the crushed stone cover pretreated with 1% of MC-2 was nearly dust free, adhered well, and was light enough for reasonable night-time visibility.

Methods

The success of the experiment made us decide to use pretreated aggregate in the surface treatment of all arterial pavements. Aggregate was pretreated with the bitumens shown by the following three methods:

1. Mixing in pugmill of municipal asphalt plant on rainy days and stockpiling. Dry crushed stone treated with 3/4% MC-2, 1,078 tons.
2. Purchase from bituminous contractor. Dry slag mixed in pugmill of asphalt plant and combined with 1% MC-2, 1,500 tons.
3. Purchase from aggregate producer. Wet aggregate treated with 1/2% MC-2 or

½% Primer T in continuous screw-type mixer.

150 tons crushed stone treated with Primer T
150 tons uncrushed stone treated with Primer T
150 tons crushed stone treated with MC-2
150 tons uncrushed stone treated with MC-2

Test Experience

Experience with materials pretreated by all three of the above materials was generally satisfactory and the results, in terms of decreased dust nuisance and reduced clean-up necessary, more than justified the expenditures involved. Our specific experience with each method follows:

1. *Crushed Stone Pretreated at Municipal Asphalt Plant.*—Crushed stone totaling 1,078 tons was pretreated with ½% MC-2 in the pugmill of the municipal asphalt plant. Stone was dried by running it through the aggregate drier, its temperature after drying averaging 130° F. Temperature of MC-2 was maintained at 100° F. Considering this small percentage of bitumen, the aggregate was fairly uniformly coated with a dark gray color. The bitumen percentage was held at a minimum to prevent any possibility of lowering the penetration and thereby decreasing the stability of the seal coat of bitumen applied to the street surface. Following mixing the material was stockpiled for 10 days to permit the MC-2 to completly cure.

Application of the pretreated stone was made to 18 arterial streets having bituminous macadam, sheet asphalt, and portland cement concrete surfaces. The seal coat was .25 gallons per square yard of MC-5 on hot days and .25 gallons RC-5 on cooler days. Cover varied from 18 to 19 pounds per square yard of pretreated aggregate. Compaction was effected by means of two 8-ton tandem steel-wheeled rollers. Realizing that some aggregate is crushed by steel-wheeled rollers, experimental use was made of a towed rubber-tired roller. This test was unsuccessful because of the difficulty of maneuvering a towed roller on city streets—particularly turning when working in one lane, the tendency of aggregate to pick up on the rubber tires, incomplete compaction, and failure to cover the entire surface.

Observation of the work following application indicated that initial dust was reduced but not eliminated, that there was a minimum amount of aggregate picked up by traffic, and that the general pavement surface color was gray. Dust after 72 hours was definitely noticeable but considerably less than that produced by an untreated aggregate cover. Mechanical aggregate pick-up in the gutters was required, but the volume of sweepings was approximately one-third of the amount of loose aggregate that would be removed if the cover were untreated.

2. *Crushed Slag Processed at Contractor's Plant.*—At the contractor's plant, 1,500 tons of ⅜-inch crushed slag were dried and then pretreated by adding an average of 1% MC-2 in a pugmill mixer. The slag was dried by running it through a cylindrical aggregate drier. The contractor had difficulty in reducing temperatures, some running as high as 230° F. Since material was stock-piled for only about 16 hours during a period of hot weather, its temperature upon arrival at the job site was initially about 125° F. Application of a cover of 18 pounds per square yard of the warm pretreated slag to a coat of .3 gallons per square yard of rapid setting asphalt emulsion (RS-2) resulted in an objectionable amount of pick-up by traffic, even after careful compaction by 8-ton steel-wheeled rollers. By close supervision of the contractor's aggregate-drying operations and requiring him to stock-pile the pretreated aggregate for a minimum 72-hour period, the pick-up of aggregate was reduced appreciably. However, in order to eliminate pick-up it was necessary to block all arterial streets to traffic for four hours following surface treatment. The curing time permitted by this traffic restriction resulted in unusually good results. There was almost no dust, pick-up by traffic was at a minimum, and it was necessary to clean up loose aggregate only at a few locations. We believe that the slag has provided an ideal non-skid cover. However, we are concerned over its tendency to adhere to pneumatic tires.

3. *Wet Aggregate Processed at Supplier's Plant*—Using aggregate from unsheltered stock-piles averaging 1½% surface moisture, 600 tons of aggregate, 300 tons crushed ⅜-inch size, and 300 tons uncrushed ¼-inch size, were pretreated with either medium-curing asphalt MC-2 or tar oil Primer T at the supplier's plant. The bitumen was added in a continuous screw-type mixer which processed about one cubic yard per minute.

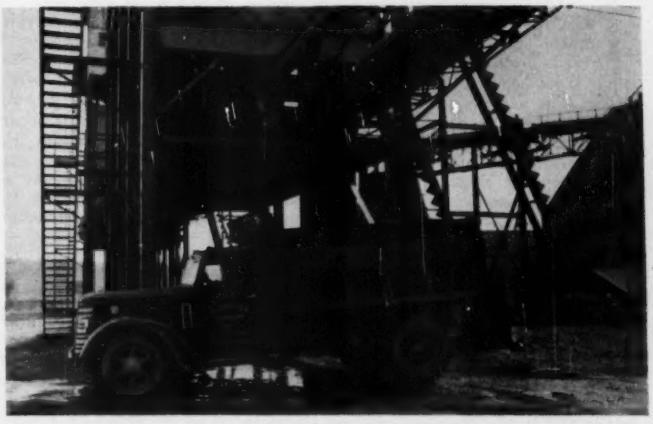
The aggregate treated with MC-2 was used as a cover for a seal-coat of rapid setting asphalt emulsion RS-2, and that processed with Primer T was used to cover a tar seal-coat of RT-8. In both cases the cover varied from 16 to 18 pounds per square yard, and the seal-coats were applied at the rate of .25 gallons per square yard and compacted by 8-ton steel-wheeled rollers.

Encouraging Results

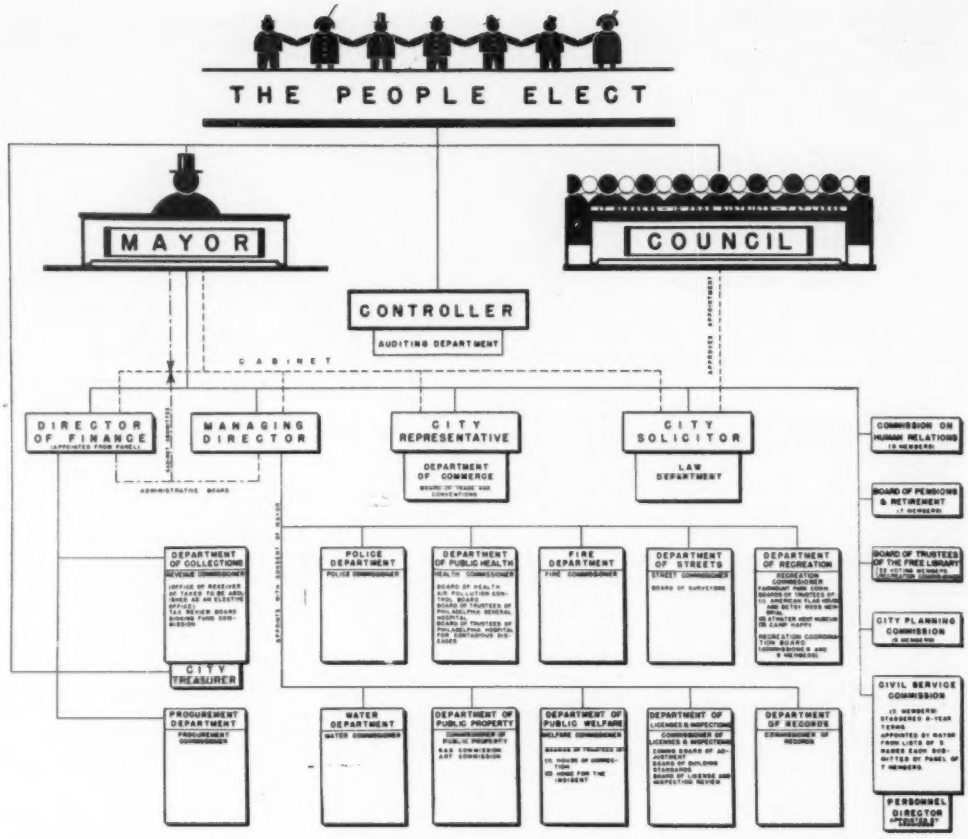
Our experience with this type of pretreatment was most encouraging. The dust was almost non-existent, cover adhered well with negligible pick-up under traffic, and clean-up was generally unnecessary. We were agreeably surprised over the adhesion and effectiveness of the pretreated bitumen in spite of the wet aggregate.

There was little difference in the bonding of crushed and uncrushed aggregate. We use the uncrushed cover on secondary streets where traction is not a primary consideration.

Since Method 3 is the least expensive method of obtaining pretreated aggregate, we plan to follow it in surface treatment of all arterial streets in the year ahead. The above experiments were conducted under the direction of C. E. Brokaw, Superintendent, and Charles Heidschuch, Assistant Superintendent, by the writer in conjunction with Arthur Lahrman, Assistant Engineer.



The mixer discharges the coated aggregate at a rate of one ton per minute.



Unique Charter Proposed for Philadelphia

THE HOME RULE charter drafted by the Philadelphia Charter Commission contains sections of interest to all large cities of the United States. The draft is to be submitted to the voters of Philadelphia for adoption or rejection by a majority of the votes cast at an election on April 17. The 15-member Home Rule Charter Commission, created by the Philadelphia General Assembly in 1949, first met on July 26 of that year. The Commission's work since that time has been notable for its emphasis on public hearings, solicitation of the views of all interested individuals and organizations, and careful study of the successes and failures of charters in other large cities.*

After careful analysis, the Commission concluded that a "strong mayor" form of government would be desirable for the city. It reported that although the city manager plan has apparently been a great success in many American cities, it would not be suitable for Philadelphia at the present time for important reasons, including the size of the city, its nature, its traditions, its election laws, and the patterns of its political life.

Mayor's Office Strengthened

Under the proposed Charter the office of the Mayor is strengthened as follows:

1. The Mayor is given principal assistance in the Managing Director, the Director of Finance, and the City Representative to lighten his burden of administrative routine work, and to leave him more time for the solution of pressing community problems.

2. He appoints the above officers and his department heads (except the City Solicitor) without the necessity of getting the consent of City Council.

3. He will appoint the members of the Civil Service Commission from names submitted by a panel of university, business, and labor representatives. (The Commission is now appointed by City Council.) He will have a greatly strengthened and adequately financed personnel agency.

4. He will also have a modern, integrated, financial agency under the Director of Finance, responsible for budgeting, accounting, purchasing, and revenue collection.

Important checks on the Mayor's power are provided by the right of City Council to make investigations, to withhold or reduce appropriations, by the annual audit of the Controller (whose

* See "Citizens' Groups Spark Progress in Philadelphia," by Walter M. Phillips, July 1950 issue of THE AMERICAN CITY, page 103.

work would be checked by certified public accountants at least once every three years), and by the power of the voters to recall the Mayor from office if he loses their confidence.

The importance of City Council as a law-making body would be enlarged under home rule because it would exercise certain powers hitherto reserved to the State Legislature. The recommended plan is for a City Council of 17 members, 10 of whom would be elected by districts and seven from the city at large (at least two of whom would be from the minority party), instead of the present 22-member City Council, all of whom are elected by districts. The voters will decide separately at the polls between the recommended plan and the present system.

The Managing Director appoints the heads of most city departments, and exercises supervision over these departmental activities. In recognition of the importance of improving the city's water supply, the creation of a separate Water Department has been recommended. At present, water matters are handled by a bureau. A new Department of Licenses and Inspections has been created to centralize the issuance of all permits and licenses. A better coordinated program of recreation will be made possible by a new Department of Recreation.

The Director of Finance is appointed by the Mayor from a list of names submitted by the Finance Panel, composed of outstanding financial leaders in the city. The Finance Director appoints the Revenue Commissioner with the approval of the Mayor.

The City Representative, a new and important post, giving recognition to the importance of municipal public-relations activities, heads the department of commerce. In the charter he is designated as the ceremonial representative of the city and especially of the Mayor. He is also to "use his best efforts to give wide publicity to any items of interest reflecting the accomplishments of the city and its inhabitants, and the growth and development of its commerce and industry. He shall cause to be prepared for the Mayor any bulletins to be issued for the information of the public."

Complaint Bureau

In addition, the Mayor is directed to establish an agency in his office for receiving and answering all requests for information about the city or its government. This agency is also to "receive and investigate complaints concerning the operation of the city government."

Another novel provision in the proposed Charter is the Commission on Human Relations, which has the duty of preventing discrimination against persons because of race, color, religion, or national origin. If the Charter is approved, Philadelphia will be the first city to have provisions for such an agency embedded in its Charter.

The City Planning Commission retains its capital budget programming powers. It is to be composed of six appointed members, five of whom hold no other public office, and the Managing Director, the Director of Finance, and the City Representative.

Salaries for municipal officials under the Charter are: Mayor, $25,000; Managing Director, $20,000; Director of Finance, $15,000; City Representative, $12,000; City Controller and City Solicitor, $15,000; Police Commissioner, $13,000; Water Commissioner, $15,000; all other Department heads and the City Treasurer, $12,000; Councilmen, $9,000.

Frederic D. Garman served as Chairman of the Charter Commission, with Lewis M. Stevens as Secretary. Staff Executive Secretary is Edgar B. Cale; Charlton F. Chute is Consultant, and Paul A. Wolkin is Legislative Draftsman.

The proposed new 99-page Charter and a 14-page descriptive pamphlet, "Report to the Voters," may both be obtained from the Philadelphia Charter Commission Office, 492 City Hall, or at the Citizens' Charter Committee Office, 170 Old Broad Street Station Building, Philadelphia 2, Pa.

Norfolk Organizes Land Reclamation Committee

TO MAKE a detailed study of the possibility of reclaiming as much as possible of the rather extensive marsh areas of Norfolk, Va., a Land Reclamation Committee has been organized.

We feel that it is desirable to reclaim these marsh areas because: (1) usable land would be created, (2) mosquito and other health hazards would be combatted, and (3) the area would be more attractive.

The Committee's tentative plan is to reclaim the marshes by using fill materials made available from the large highway-construction program now under way and from the slum-clearance and redevelopment program to begin in the near future.

The Committee is also considering using some of these fill materials to establish "controlled dumping" at the city's three open dumps. (Norfolk's high water table creates a garbage- and refuse-disposal problem and the sanitary-fill method is not used. Instead, incinerators and open dumps are used.)

The Land Reclamation Committee is composed of representatives from the Departments of Public Works, Public Health, and Parks and Recreation, the Mosquito Control Board, the Redevelopment and Housing Authority, and the City Manager. The City Planning Engineer (Planning Commission) is chairman.

R. T. NICHOL
Administrative Assistant
Office of the City Manager
Norfolk, Va.

New York City Bars Housing Bias

ANOTHER major step in New York City's program to eliminate housing bias was taken on March 15 when Mayor Vincent Impellitteri signed the Brown-Isaacs bill which penalizes discrimination for reasons of race, color, religion, national origin or ancestry, in the selection of tenants for private housing projects receiving public aid.

The measure passed the City Council unanimously, and received only one opposing vote in the Board of Estimate. The law became effective immediately upon the Mayor's signature. It does not penalize previous violations, but provides for a fine not exceeding $500 for each future violation. The City Council's distinguished minority leader, Stanley M. Isaacs, Manhattan Republican-Liberal, and Councilman Earl Brown, Manhattan Democrat, introduced the measure.

A New York City ordinance adopted in 1943 provided that there shall be no discrimination in all *future* private projects financially aided by the city, such as through tax exemption. Violations are punishable by forfeiture of such tax exemption. In 1949 another ordinance was passed applying to all housing receiving public aid, including land condemnation powers. This ordinance was superseded by an act adopted by the Legislature in March 1950 applying throughout New York State.

The city law now passed is designed to apply to existing projects such as Stuyvesant Town, the large housing project of the Metropolitan Life Insurance Company on the East Side of Manhattan, which was constructed as an urban redevelopment project with tax exemption applying to the new buildings (but not to the land) for a 25-year period.

For many years, the New York City Housing Authority has followed a successful policy of permitting no discrimination in the selection of tenants for all its public housing projects whether financed by federal, state, or city funds.

WE MUST NEVER let the politicians forget for a minute that even in this emergency we Americans are not giving up our fundamental rights and liberties, and that we are only lending them to the Government to speed victory.—CLAUDE A. PUTNAM

President, National Association of Manufacturers

You Wouldn't Know It Was the Same

Spring Valley, Ill., revitalizes its water system, gives it adequate capacity, makes it automatic in operation and financially sound

By LAVERN A. MILLER
Consulting Engineer
Streator, Ill.

IT SEEMS incongruous that water supply ever should be a problem in a community known as Spring Valley. But such a water problem did arise in this Illinois city of 5,000 people. However, they met it with forthright action, led by an unselfish group of civic leaders who helped bring the community a truly unusual water plant. Here is how it all happened.

History of Supply

Spring Valley originally was a coal-mining town. Probably it had some local springs in the area at one time, but their yield could never have been productive enough to make them important for public water supply. The coal industry was important here until shortly after the turn of the century, when the better veins were worked out. For many years, the city used deep wells, going 1,600 feet to the St. Peter sandstone for water. Original records show that these artesian wells produced about 440,000 gallons daily of relatively good water with a hardness of about 250 ppm measured as calcium carbonate. The water flowed to a storage reservoir under a pressure of 60 psi and then was pumped to the distribution system, first by a steam-turbine pump, later by a single-cylinder diesel able to move about 400 gpm.

By 1939 the water problems were beginning to be acute. The old wells were able to produce only about 142,000 gallons daily, and the 150,000-gallon elevated tank which maintained operating pressure for the city was often completely empty. The 185,000-gallon ground storage reservoir seldom had more than the barest reserve for fire protection. With less than 1,000 users, the annual income from the water department ran about $8,000 per year, though operating costs were about $10,000, which rightly gave the city officials and the public great concern.

It was at that time that our firm was called on as consulting engineers to help provide an answer. Simultaneously, a Citizens Advisory Committee was formed, under the able direction of Dr. Kirby, one of the city's most civic-minded and energetic residents. We enjoyed the wholehearted cooperation of this group throughout all the activities.

Leakage Survey

Preliminary studies showed the present artesian wells were delivering 140,000 gallons per day, or about a third of the original yield. It also showed an average use by the city of 115,000 gallons daily. This prompted the need for a leakage survey to eliminate the 25,000-gallon daily loss. The survey produced immediate results, lowered the demand substantially, and relieved the overloaded condition of the wells.

The next step was to uncover a temporary supply. This was located by

In this trim, brick building is located the principal solution to the water-system problems of Spring Valley.

making a resistivity survey that showed where we might locate some shallow wells. The proper location was on an upland plateau. We constructed a 12-inch pressure-equalizing header line from these well sites to connect to a 10-inch header from the pumping station in the flood-plane to the elevated tank. The water from these wells was 28- to 30-grain hardness. Since these wells were to be used to supplement the artesian supply, the actual production of 60 gpm, small though it was, was integrated into the system by means of a 340,000-gallon ground storage reservoir at the well field. Two automatic electrically operated centrifugal pumps, rated 800 gpm each, were installed to furnish the distribution system and assure continuity of operation should the old plant fail or flood out. In this case foresight was well repaid, for in 1943 this station kept the city in water for nearly three weeks, when the Illinois River went on a rampage and flooded out the old pumping station.

Recent Developments

The third chapter in the story started to take shape in 1945 with efforts to develop a well in the flood-plane. This resulted in a well some 32 feet deep in 16 feet of gravel, producing approximately 1,000 gpm.

Another well proved able to deliver 500 gpm, and still another, 700 gpm. These were constructed in 1946 and produced waters with about 800-ppm hardness. These wells were constructed in the flood-plane, raised above the flood level, and equipped with turbine pumps, discharging into the old line from the St. Peter sandstone wells for free discharge to the 185,000-gallon reservoir and discharge from there to the distribution system.

This solved the problem of water quantity. The next problem we faced was that of water quality. The water from the new supply was substantially harder, often had a mustiness or fishy odor, and had sufficient iron to discolor it. Also, it contained methane, nitrogen, and hydrogen-sulphide gases.

So in 1947 Spring Valley made a definite decision to proceed with a water-treatment plant. It was encouraged by the revitalized condition of the department, though it did not yet have water of the best quality. The initial $65,000 borrowed by the city to carry the development of the supply had not only furnished the two wells on the upland and a 340,000-gallon reservoir and pumping station at the site, but also had made possible the installation of over 30,000 feet of additional water mains. New meters were clicking out increases in income and demand actually ran 183,000 gallons per day. Delinquent bills were non-existent and the water users had already increased to 1,200.

The plant selected was of the lime-soda ash type. This not only provides good treatment, but also is of a type that can be adapted readily to the treatment of water drawn directly from the Illinois River if that should prove necessary.

Spring Valley is primarily a residential community with light industries. Its population trend indicated a peak demand of 650,000 gallons daily by 1990. This indicated a treatment plant able to produce 500 gpm. It also showed the desirability of using the existing 185,000-gallon storage reservoir at the old station as a wet-well storage, and abandoning the remainder.

The plant, now completed, brings the water into the plant through two 10-inch cast-iron supply lines. One of the lines brings water from the two original St. Peter wells. In order to secure maximum production from these wells, an automatic centrifugal pump is connected to this line as suction to remove any excess head. These wells have now increased from 72 gpm, when the plant went into operation, to 105 gpm under this intermittent demand.

The other line draws water from the three wells in the flood-plane. It discharges through a Builders-Providence rate-of-flow controller to balance out a 500-gpm plant rate. The operator makes the selection of pumps at his control panel in the station, subject to the automatic cycle control of the plant.

How the Treatment Works

First phase of the treatment is the removal of methane and hydrogen sulphide. The plant accomplishes this by passing the water through a rotary distributor over rock. This also produces some iron oxidation. The water is discharged directly to the Walker Process Clariflow unit. Here in the inner chamber, a jet-type pump, in addition to the propeller-type mixing vanes, provides the mixing action. Alum, soda ash, and lime are fed directly into this unit, using Omega Universal units equipped with mechanical mixers with extended hoppers, to the chemical storage room above. Chemicals are elevated to this storage room, which has a capacity of two carloads, by an electric hoist. Lime slurry or sludge is automatically discharged to waste through Fisher solenoid-controlled diaphragm-valves operating intermittently from a timer on the control panel.

Water flowing through the Clariflow unit, over weirs, reaches the recarbonation chamber or tank where a Walker process Carball gas-burning unit adds carbon dioxide for pH adjustment. From the carbonation unit, the water is distributed to the three filter units which are equipped with carborundum plates and aluminum wash-troughs. All influent, effluent, and wash-water valves at the filter face are Golden-Anderson, electrically actuated and hydraulically operated.

As the water leaves the filters it discharges to a small wet well from which it is pumped to the 185,000-gallon storage with short-coupled Aurora Pump Company turbine pumps.

Automatic Operation

From an operating standpoint, the entire plant is especially interesting, since everything is automatically controlled from the storage reservoir. When the distribution system calls for water, one centrifugal pump starts and, under normal conditions, satisfies the system, and stops. In case of fire or demand in excess of 400 gpm, the second unit starts automatically. Together they pump around 750 gpm until the demand is satisfied.

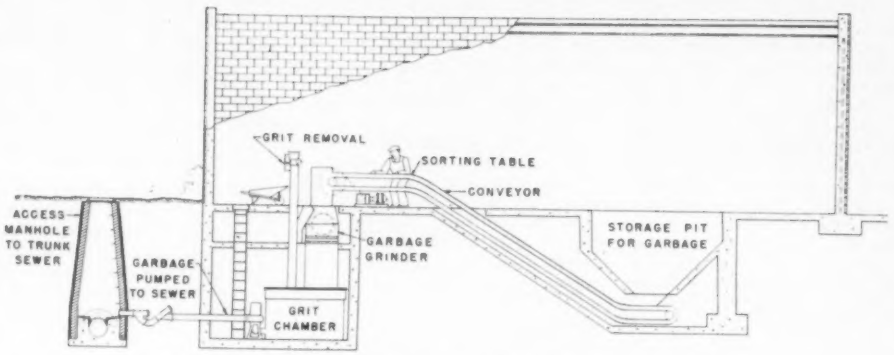
If the water in the reservoir drops, things start to happen inside the plant. The electric valve stopping the flow of water from the artesian wells opens and the booster pump on that line starts. The turbine pump or pumps on cycle in the well field start, and the rate-of-flow controller chokes production back to balance the incoming total flow at 500 gpm. Flow of treated water is released to the chemical feeders and the electrical current puts these feeders on the line in operation. Bells ring on the Carball carbon-dioxide generator, and impingement gets under way in about two minutes, with cooling water from the burner discharging into Filter No. 1 rather than being wasted. Influent and effluent valves on the filters snap into proper operating position and the plant is in complete operation in less than three minutes.

Chlorination is automatic, too. A Wallace and Tiernan unit, manually adjusted, but automatically operated, discharges to submergence in the pump following treatment and prior to storage in the 185,000-gallon reservoir.

The entire operating table with its mastery of the entire plant is less than two feet wide and four feet long. Telltale lights show the positions of the operating electric valves, pumps, and other equipment.

The plant has a neat office for the operator, a complete laboratory, and a meter-repair shop in the building.

The plant cost $165,750 complete. At the end of the first year the system serves 1,550 users and has on hand 50 additional applications. The department earns a gross revenue of $50,000 and a gross profit of over $27,000. The public and its officials are pleased that their water problems are now over, and we, as engineers, are gratified over another job well done.



This drawing shows how the proposed grinding stations would look.

Los Angeles Experience Favors

Central Garbage-Grinder Stations

Comprehensive report by A M Rawn, Chief Engineer of the Los Angeles County Sanitation Districts, uses data from a 1,220-family community that is fully equipped with grinders

IF FOOD-WASTE grinders are installed in every kitchen in a normal community with a normal complement of business and industry, one can expect the BOD of the sewage to increase by 24% and the suspended solids to increase by 20%. If the community is strictly residential, without business and industry, then the concentration of the sewage will be double these figures.

Analysis of the Program

This was part of the information presented in a 319-page report by A M Rawn, Chief Engineer and General Manager, Los Angeles County Sanitation Districts, analyzing the entire refuse-sanitation program. The report presents a comprehensive plan for elimination of private-contract garbage collection and home incinerators. The plan would put into effect a vast rubbish-collection system which would serve about 1,800,000 county residents in an area covering 470 square miles. Included are Long Beach and Pasadena.

The report proposes, among other things, the purchase of three central landfill centers for combustible and non-combustible disposal, and the erection of nine central garbage-grinder stations which would empty into the sewers.

This particular proposal is important in view of many conflicting arguments that home grinders and central garbage grinders tend to overwhelm sewer capacities in most American communities. The report finds that just the opposite is true.

The project would collect garbage separately and discharge it at central garbage-grinding stations, where it would be reduced to slurry and disposed of into one of the trunk sewers of the districts. The stations would be rendered odor-proof by treating the exhaust air. Disposal of garbage slurry to sewers also solves a very formidable transportation problem, the report shows.

Total Cost of Garbage Disposal Will Amount to $1.10 Per Ton

The total cost of the disposal of garbage through grinding facilities, sewers, and sewage-treatment works will amount to about $1.10 per ton of wet garbage. Garbage solids so disposed of will increase the gas and fertilizer production at the central sewage-treatment works.

The report probed the argument that ground garbage introduced into the sewage system will overwork existing trunk and main lines and require additional facilities. It found that certain additional facilities would have to be built at the treatment plant, but that sewers would not be taxed by the added load.

District investigators studied a newly constructed subdivision near Norwalk, Calif., in order to formulate a decision concerning the use of home grinders. This subdivision, like many now being built in California and elsewhere throughout the nation, is completely equipped with home grinders. There are 1,220 single-family dwellings in the tract, housing some 4,000 persons. Each home is equipped with a garbage grinder which was installed by the builder at the time of the tract's construction. Sewage from these homes is collected by local sewers and carried to a single outlet connecting to a trunk sewer of the sanitation district. No sewage enters this connection other than that originating within the subdivision, so that sewage is strictly residential.

This tailor-made, testing subdivision

yielded some interesting and far-reaching facts concerning the effects of garbage grinders on sewer capacity, and formed a basis for conclusions relating to central grinders.

Since most family wage-earners in this tract leave the area during the working day, the total sewage contribution is somewhat reduced, and analysis of the data must take this fact into consideration. During two 24-hour test periods, one on a Monday and the other on a Wednesday, data were obtained by Mr. Rawn's investigators. Twenty-four composites, taken every half-hour on the basis of flow in the sewer, were analyzed for BOD and solids content. Half-hourly composites were also analyzed for solids content to determine variations due to garbage grinders. Flow was measured by means of an automatically recording weir located in the first manhole below the sampling manhole. The average flow from the area over a 10-day period amounted to 47 gallons per capita per day. The average BOD was 390 ppm, of which 142 ppm was soluble. The average suspended-solids content was 380 ppm.

Based on daily contribution in pounds per capita, these figures show a total BOD of 0.153; soluble BOD, 0.056; suspended solids, 0.149.

To compare these findings with what may be assumed to be normal residential sewage from homes without garbage grinders, the survey used figures from the East Bay (Calif.) cities' *Sewerage Study*. Analyzing home-grinder communities against non-home-grinder communities showed that universal installation of home grinders would increase the total BOD by 47%, the soluble BOD by 65%, and the suspended solids by 39%. The report reveals that increase in flow is hardly measurable, but grease content is more than doubled—from about 50 ppm to 110 ppm—although only about 5 ppm is in flotable condition. The effect of grease on ground garbage in local sewers was not completely analyzed. The report states, however, that a careful physical inspection of the sewers in the area of the residential tract failed to show serious grease encrustation.

Based on Residential Flow

These observed increases are based on residential flow; but if data were to be based upon combined domestic and industrial flow, such as is now tributary to the District's joint disposal plant, the percentage increase would be roughly half of those mentioned above—that is, an increase of 24% in total BOD, an increase of 32% in soluble BOD, and an increase of 20% in suspended solids.

Since American cities are still a long way from universal installation of home grinders, elimination of huge garbage-collection systems is far from practical. With this in mind, the Rawn report has geared its study to central garbage grinders, nine of them in the 12 sanitation districts for which it conducted the survey. "It is proposed," states the report, "to introduce garbage into the sewers in the proportion of 22 tons of wet garbage per hour to each cubic foot per second of sewage flow in the trunk sewer."

At this rate, the quantity of solids introduced into the sewer from garbage will equal about 3,600 ppm by weight. Although this increase admittedly represents an increase of total solids by some 300 to 400% over that in present sewage, the total solids content would still be only 0.36% by weight, the sewage being 99.64% water.

Costs

In a breakdown of estimated garbage-grinding and sludge-disposal costs for garbage ground to the sewers through central grinding stations, the Rawn report estimates that the total cost per ton of wet garbage disposed through central stations will be from $1.07 to $1.14, depending on the current price of dried sludge as humus-fertilizer.

Of this amount, garbage-grinding and administration costs account for $1.09, and sludge-disposal costs for $0.13, a total of $1.22 per ton of wet garbage for grinding and sludge disposal. Revenue of $0.08 to $0.15 per ton of sludge from wet garbage is expected, however, which will decrease total operational costs to $1.07 and $1.14 per ton of wet garbage.

An Important Factor in Central Grinding

The Rawn report, which probably will be adopted in time by the 12 Los Angeles County Sanitation Districts, is a step forward in handling at least one phase of the refuse problem now burdening some 27 communities in Southern California. In reference to a community-wide adoption of grinders, Mr. Rawn said:

> One possibility is that the districts may act as agent for the homeowners in obtaining bids for supplying and/or financing the grinding units; however, it is doubtful that the district would care to assume the responsibility for the selection of an individual's grinder, which, like his automobile, the individual would probably desire to select for himself. Nor is it deemed good business for the districts to assume responsibility for the maintenance of home grinders because of the wide divergence in type and quality of the several makes.
>
> There is every indication that the eventual universal use of home garbage grinding units in urban homes is as assured as the present universal use of inside sanitary facilities in such homes. Nevertheless, the convenience and health and sanitation benefits of home garbage grinders are sufficient justification for their use.

Breakdown of Estimated Garbage-Grinding and Sludge-Disposal Costs for Garbage Ground to the Sewers Through Central Grinding Stations

Garbage Grinding		
Labor—including weighing, sorting, and supervising personnel	$0.59	
Maintenance and repairs	0.12	
Utilities—water, electricity, gas and telephone	0.12	
Supplies—office and janitorial	0.03	
Amortization of bonded indebtedness (average cost for 40-year period at 3% interest)	0.12	
Depreciation reserve for replacement of equipment (average cost for 10-year period)	0.06	
Administration	0.05	
Sub-total—cost per ton of wet garbage for grinding	$1.09	$1.09
Sludge Disposal		
Labor—additional requirements at sewage-treatment plant	0.08	
Amortization of bonded indebtedness for additional sludge digesters (average cost for 40-year period at 3% interest)	0.03	
Amortization of bonded indebtedness for additional sludge drying beds (average cost for 40-year period at 3% interest)	0.02	
Sub-total—cost per ton of wet garbage for digestion and grinding	$0.13	$0.13
Cost—Per ton of wet garbage for grinding and sludge disposal		$1.22
Revenue		
Derived from sale of sludge per ton of wet garbage		$0.08 to $0.15
Total cost of disposal through central grinding stations per ton of wet garbage		$1.07 to $1.14

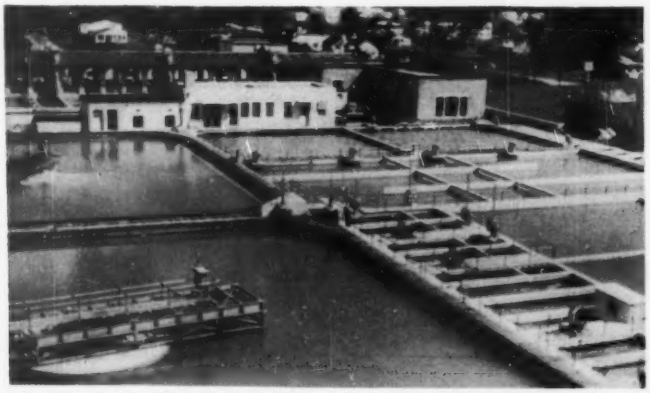
Lime-Recovery Operation

Miami, Fla., recalcines lime sludge produced in its water-softening plant, insuring a continuous lime supply at an 81¢-a-ton saving

By W. A. GLASS, *Director*
Department of Water and Sewers
Miami, Fla.

Lime sludge is collected in this clarifier in the foreground and is recalcined in the long kiln at the rear. The clarifier is unusual in that it is built of prestressed concrete, using the wire-wound Preload Company type of construction. The sludge-collecting mechanism is made by the Dorr Company.

IN FEBRUARY 1949 the City of Miami, at a cost of $800,000, completed the construction of a lime-recovery plant adjacent to its water-treatment plant located in Hialeah. It was designed to produce a maximum of 80 tons of quicklime per day, using as its raw material the calcium carbonate sludge that precipitates out in the water-treatment plant's clarifier basins.



The rest of the softening plant. Left to right are additional clarifiers, carbon dioxide and chlorine diffusing basins, and chlorine contact basins. In the background are aeration basins, open-air filters, and the pump building.

Since that date the lime plant has been operating almost continuously, and has produced all the lime required by the treatment plant, as well as an excess tonnage. The excess tonnage has been sold to neighboring cities at a little above cost, to the benefit of both.

The lime kiln is 230 feet long and has an outside diameter of 7½ feet. It was designed to produce a ton of lime using 8,400,000 BTU, which is the equivalent of 60 gallons of bunker "C" oil. Experience has indicated the average fuel consumption to be between 5% and 10% less than the designed amount. The CaO content of the lime produced is maintained between 90% and 94%. This has proved to be the optimum condition for the production of a product that will slake with the minimum of rejects.

Sludge from the clarifiers of the water plant is thickened to approximately 20% solids content in two circular thickeners. Further de-watering is accomplished by the use of a Bird centrifuge which produces a cake of between 62% and 65% solids. This cake is fed into the kiln by a screw conveyor. Just within the feed end of the kiln, a 30-foot chain-recuperator system thoroughly mixes the wet sludge with the hot gases in the kiln. An indication of the efficiency of this chain-recuperator system might be gained from the fact that the temperature of 12,500 cfm of gas is reduced from 1,000° F. to 350° F. The lime evolves from the kiln in small lumps that have an average size of 1 inch and are almost spherical in shape. A screw conveyor and bucket elevator deposit the lime into a 400-ton-capacity steel silo. An Airveyor system conveys the lime from here to either a 75-ton-capacity silo situated alongside the plant's railroad siding, or to two 100-ton-capacity bins within the chemical house. The railroad-siding silo is used to load either trucks or railroad cars, while the chemical house bins feed directly to the treatment plant's Omega slakers.

Production Quantities

During the 12-month period ending January 31, 1951, the plant produced 17,753 tons of lime, or an average of 48.7 tons per day. Because the rate of production exceeded the demand, it was necessary to shut the plant down at least three days per month during the summer months. However, when the city's new 80-mgd plant is completed, it will be necessary to operate the kiln continually near it full capacity.

The savings cost per ton of lime produced during the 12-month period

was $6.82. This does not include the charge for interest and amortization. Of course, as the production rate increases, the cost per ton is expected to decrease. The city sold 2,528 tons during that same period. This reduced the cost of lime produced to $6.24 per ton.

It is estimated that the city is effecting a saving of $11 per ton of lime used. The net remaining tons of lime after sales was 15,225 tons. At $11 per ton, the approximate savings for the year ending January 31, 1951, were $167,475. It is easy to perceive that the $800,000 investment will very quickly be retired. But more important is the fact that the water-treatment plant always has on hand an ample supply of lime for its water-softening process. This alone would be sufficient to justify the construction of the plant. Unavoidable shipping delays in the past were instrumental many times in upsetting the normal routine of producing a pure, soft, potable water for the people of Miami. This is the prime function of the water-treatment plant. The lime-recalcining plant is the city's insurance that this will always be so.

The Universities and Local Government

A NUMBER of fellowships and research assistantships in fields involving local government have been announced by several universities:

University of North Carolina. The Department of City and Regional Planning at Chapel Hill offers several research assistantships for persons interested in undertaking a program toward the Master's Degree. Stipends cover tuition plus $75 a month. Address Professor John Parker.

Wayne University. The Detroit Bureau of Government Research announces that for the second year there are offered the Lent D. Upson Fellowships for Graduate Training in Public Administration, for 12 to 15 months beginning in July or September 1951. Stipends range from $1,800 to $2,250, plus graduate tuition and fees, and any rights under G.I. bills. On-the-job training of not less than 1,080 hours in the Bureau is required. Address Loren B. Miller, Director, Bureau of Governmental Research, 810 Farwell Building, Detroit 26, Mich.

Massachusetts Institute of Technology. Starting in 1951, M.I.T. will offer each year a Bemis Foundation Fellowship of up to $2,500 to a student engaging in a program of graduate research in housing. Address Burnham Kelly, Director, Albert Farwell Bemis Foundation, M.I.T., Cambridge 39, Mass.

The Department of City and Regional Planning has also announced the F. W. Chandler Fellowship in City Planning, amounting to $1,200 for the academic year 1951-52, and also a limited number of scholarships covering whole or partial tuition for the graduate course in City Planning. Write to Professor F. J. Adams, Room 7-333, M.I.T.

Stevens Institute of Technology. The Board of Freeholders of Bergen County, N. J., has retained the Institute for a study of refuse-collection and -disposal practices in the county's 70 municipalities. The study is being made by Professor Paul A. Volcker, former manager of Teaneck, N. J., and William S. Foster, Engineering Editor, THE AMERICAN CITY, who have both been conducting courses of instruction at Stevens in municipal government and public works.

Columbia University. The Planning and Housing Division of the School of Architecture has announced a nine-week study-tour to selected urban areas in Europe, with registration on June 11. Course credit of 2 to 6 points will be given. Travel and living expenses total $935, plus tuition at $20 per point. For further information address Professor J. Marshall Miller, 504 Avery, Columbia University, New York 27.

University of Illinois. Regional Planning is in its 18th year at the University of Illinois, reports Karl B. Lohmann, Professor of City and Regional Planning in the Department of Landscape Architecture. For information about the undergraduate course in Regional Planning, address Professor Karl B. Lohmann, 201 Mumford Hall, Urbana. Leading planners have been guest speakers at such courses.

New Jersey Shows Public-Housing Leadership

WITH more than $40,000,000 in low-rent public housing already under construction in the State of New Jersey, the New York Field Office of the Public Housing Administration has made public plans for placing under construction an additional $100,000,000 in New Jersey public housing by the end of the year.

According to 1950 housing census figures, there are 82,780 families living in substandard dwellings in 18 New Jersey cities.

The following New Jersey communities currently have projects under construction:

Atlantic City	Newark (2)
Bayonne (2)	New Brunswick
Hackensack	Paterson
Hoboken (2)	Perth Amboy
Jersey City (2)	Phillipsburg
Long Branch	West New York
Rahway	Woodbridge
South Amboy	Trenton

Other housing projects in the state in an advanced stage of development, which are expected to be started this year, are:

Asbury Park	Irvington
Atlantic City (2)	Jersey City (3)
Bayonne (3)	Kearny
Bloomfield	Morristown
Burlington	Newark (3)
Camden (2)	Orange (2)
Garfield	Passaic
Guttenberg	Paterson (2, 3)
Harrison (2)	Princeton

Additional communities in the state, whose reservations have been approved for a total of more than 14,000 low-rent dwelling accommodations, will bring the grand total of construction activity for the federal low-rent housing program in New Jersey to $140,000,000.

Ground-breaking for the first low-rent housing project in Bergen County, N. J., under the new federal program, took place at Hackensack on March 8. The project is for 144 families, consisting of eight three-story brick structures with 25% land coverage. Kelly and Gruzen are the architects.

What Federal Taxation Of Municipal Bonds Would Mean

FOR MORE THAN A DECADE, state and local officers have been forced to defend their states and their cities, both in the Congress and in the Courts, against attempts by the Treasury Department to destroy the immunity of the bonds of state and local governments to federal taxation.

To an officer of local government, one fact—out of all the thousands of pages of testimony which have been presented over the years to Congressional Committees—is of paramount importance. This fact is that the removal of the tax immunity of local and state bonds would have a severe, *perhaps a disastrous* effect on the abilities of municipal governments to administer properly their financial affairs.

By PAUL V. BETTERS
Executive Director
United States Conference of Mayors

THERE has been a disagreement between representatives of local governments and the Treasury Department as to the precise amount by which the cost of municipal financing would be increased were the tax immunity of our bonds to be removed. But on the fact that an increase would result, there has been accord even from Secretary Snyder in his statement to the Committee on February 5th.

The reason for the increase is clear. Investors would demand a higher interest rate on the bonds to offset the amount of tax they must pay. As a matter of fact, the increase demanded would doubtless exceed the actual amount of the tax imposed, as a hedge against the possibility that once a tax exemption has been removed the chance for an increase in the amount of the tax is always present.

Whatever the precise differential required to enable a municipality to issue its bonds at the same prices without tax immunity, the important fact is that all parties to the debate have agreed that the costs of local finance would be appreciably increased. Conservatively, the annual cost would be increased by *no less than 1%* of the amount borrowed and perhaps considerably more.

Total Volume of State and Municipal Bonds Outstanding

The total volume of state and municipal bonds outstanding has remained since the early 1930's at approximately $20,000,000,000. It may be assumed that future local financing will remain at about this level. If this is so, it is obvious that local and state governments would ultimately be forced to shoulder an additional annual burden of $200,000,000—and this burden must necessarily be placed on capital structures already subject to tremendous strain.

Imposing such a burden on the municipalities of this country would leave local government officers with two extremely unpleasant alternatives:

On the one hand, we could submit meekly and deny ourselves the essential facilities which this sum represents. Thus, we could conceivably curtail new housing, improved highways, better schools, and more efficient hospitals. This, however, is an alternative from which I am sure all of us shrink.

Under the other alternative, we could offset the new burden by increasing the taxes of the local taxpayer. But, since 90% of municipal revenues are derived from taxes on property and about 83% of the total state and local debt is municipal, three-quarters of the local burden would be borne by the property owners whose burdens are notoriously straining their ability to pay even now.

It is ironic that those who desire to impose a federal tax on our bonds, on the theory that the present exemption destroys the "progressiveness" of the federal tax structure, would force us to substitute a property tax or sales tax—perhaps the most regressive of all forms of taxation, as they are levied without concern for the individual taxpayer's ability to pay. The progressive taxes are not for local governments. They have been preempted at the federal and state levels.

Those who would propose to remove the tax immunity of our bonds have, over the course of years, resorted to many different justifications for their proposal. The one which is advanced with perhaps the greatest favor today is the need for added federal revenue. As a matter of fact the taxation of municipals would produce no appreciable revenue for the present emergency.

This is so because the present proposal is to tax municipal bonds which will be issued subsequent to the enactment of any tax status. To be conservative, let us assume that municipal bonds will continue to be issued after the imposition of such a tax to the same extent as they have been in the past. If so, we shall have roughly $1,000,000,000 per year of new, taxable state and local bonds. On this basis it will be at least 20 years before federal taxes could be imposed on state and local bonds to the amount now outstanding. The revenue available to the Federal Government from this source during the present emergency would be negligible, and even after 20 years the amount would be much smaller than the proponents of this type of tax would have you believe. Let me illustrate.

In the first year after the imposition of a tax, $1,000,000,000 in new bonds might be issued. Let us assume that the present average interest on state and local bonds of about 2% would be pushed by a federal tax to about 3%; this would mean there would be available for taxation altogether a gross annual interest of only about $30,000,000.

While this figure, if taxed at the rate of 100%, pales into insignificance alongside the federal budget, actually only a small part of even this small amount would be available as a source of federal revenue.

How Municipal Bonds Are Held

In the first place, the Treasury itself reports that about one-quarter of all outstanding municipals are held by tax-exempt organizations, such as mutual savings banks and insurance companies, and in government funds of various sorts. This percentage could probably

increase because taxation of presently exempt bonds would make them much more attractive to investors such as mutual insurance companies than savings bonds, which are tax exempt in their own right. Today, such investors often feel the yield on tax-exempt bonds is too low since they, unlike the investor who is subject to tax, get no value from the exemption feature. Thus, there would be a shift of such bonds to tax-exempt holders and a consequent reduction in the revenue available for taxation.

One-third of the total amount is held by corporations. Assuming the corporate tax rate will be 55% next year, the amount of tax payable on the bonds issued in the first year after the tax and held by corporations would be roughly $5,500,000.

The balance of the $30,000,000 interest payable on all new issues during the first year would be payable to individuals, and hence would be taxable at the individual income-tax rate. Assuming this rate to average 50%, the total amount of revenue realizable by the Federal Government from this source would be approximately $6,000,000. This amount, plus the amount collectable from corporations, would mean $11,500,000 of increased revenue to the Federal Government. This figure would increase very slowly and could probably never exceed $200,000,000 a year. But during the next four years the yield would be insignificant, averaging only about $25,000,000.

Such amounts would have an infinitesimal effect on the federal budget, but think what the imposition of the tax would mean to the individual community! New York might feel it impossible to finance the new hospitals which it so desperately needs. Pittsburgh might just have to get along with its crowded schools it had expected to enlarge.

It seems clear that the relatively small benefit to the Treasury Department, which in any event would not be fully realized for at least 20 years, is poor justification indeed for disrupting the finances of our states and municipalities.

The "Loophole" Argument

Now, let us consider the traditional argument that the present tax exemption affords a "loophole" for the taxpayer in the higher income brackets. This is a particularly insidious argument because, while the proposal to remove tax immunity would actually have its greatest effect on those least able to bear the burden, it is clothed with the label of a "soak-the-rich" proposal. The argument has emotional appeal, but suffers from one fundamental defect—it is not supported by the facts.

In the first place, as I have already shown, most outstanding state and local bonds are held not by individuals, but by organizations which are either tax exempt, or are not subject to the graduated personal income tax. And of the total amount held by individuals, only a small percentage would be in the hands of persons whose incomes would be sufficiently high to afford them any benefit from investment in such bonds.

In this connection, note that the percentage of individual holders of these bonds has not increased, despite the rise in income-tax rates since 1937. This is strong evidence of the fact that tax avoidance is not, and never has been, a prime reason for the purchase of state and local bonds.

In the second place, figures produced by the Treasury Department indicate that wealthy individuals invest only a small percentage of their funds in these bonds. Statistics on investments held in decedent estates are published periodically by the Treasury Department staff in connection with estate-tax information. A study of all years reported on by the Treasury since 1926 indicates that only about 12% of the wealth in estates of over $1,000,000 was invested in tax-exempt state and local bonds. Even more cogent, persons with million-dollar *incomes*, as opposed to million-dollar estates, received only 6% of their incomes from interest on state and municipal bonds during the period from 1917 to 1937.

These percentages are too small to be explained on a "loophole" basis. They more likely show nothing more than a wholesome desire by these investors for diversification among securities. There would be more to criticize if men of means in this country failed to support local government by applying a share of their wealth to the purchase of our local securities.

Possible Results Summarized

In summary then, the imposition of federal taxes on state and local bonds would have three possible results:

- *First*, such a tax would mean that the cities and states of this country might have to forego the financing of much desperately needed housing, hospitals, schools, irrigation, and sewage disposal which would have been provided by the $200,000,000 by which the cost of municipal financing would be ultimately increased;
- *Second*, in the alternative, the cities and states might attempt through the imposition of regressive property and sales taxes on their citizens to offset the added cost—such a move being directly contrary to the Treasury's avowed purpose of increasing the application of taxes according to ability to pay; or
- *Third*, the desperately needed local facilities might be provided by the Federal Government, which would thus have the power to decide what is "good" and what is "bad" for the local community as a substitute for self-rule. This alternative also would destroy completely the argument that the tax is a revenue measure, since the same cost would be incurred by the Federal Government instead of by states and local governments.

More important than any of these tragic consequences, perhaps, is the fact that the proposal to tax state and local bonds by the Federal Government is contrary to our system of government, the main characteristic of which is the division of authority between the central government and the constituent jurisdictions. As a necessary corollary to the power to tax, the Federal Government would enjoy the power to exempt from taxation. This power is, in essence, the power to control state and local finances, and it could mean the destruction of our dual system of government.

The benefits to be gained from thus enhancing the power of the Federal Government, which I believe have been shown to be completely illusory, are patently insufficient justification for altering the system of government established for this country under our Constitution.

EDITOR'S NOTE: See also *The United States Municipal News* for March 1, 1951. This contains the text of a statement by Mayor David L. Lawrence of Pittsburgh before the House Ways and Means Committee on "Proposed Federal Taxation of Municipal Bonds."

A Proposal for a County Service Corporation

THE INGENUITY of Americans has failed badly in trying to meet the problems of a great metropolitan community like Allegheny County, or my own, of Cincinnati. Annexation, except for fringe areas, is most unlikely today and in many ways is undesirable. New York is the only great city which worked out a solution, and no one has followed it or learned from it.

For some years, a group of us in Cincinnati have worked on a scheme for a county service corporation in which the communities, without giving up home rule on purely local services, could unite on a basis of population and size to provide certain kinds of county-wide service, like water, fire protection, garbage and waste disposal, police communications, general hospital, and so on. The scheme makes sense, but we have been stymied by the complexity of the statute and charter needed to put it in force. It would have to have the united support of all political factions for it to work, and that is not simple to achieve.

CHARLES P. TAFT
Lawyer and City Councilman of Cincinnati, at Allegheny County Boroughs Association Dinner, at Pittsburgh, Pa., January 26, 1951

The new diesel fireboats in action and in motion; the same engines drive the fire pumps and the propellers.

Philadelphia, Pa.

There's No Old Equipment In the Bureau of Fire

A PROFOUND change has taken place in Philadelphia's Bureau of Fire in the two years that Samuel H. Rosenberg has occupied the position of Director of Public Safety. The physical change is inescapable, but with it there has been a spiritual uplift also, due partly to the new capabilities inherent in adequate equipment; but largely, perhaps, to a realization by the personnel that they are not forgotten men.

On the square opposite City Hall—a display of 22 new pumping engines and 12 aerial ladders.

Just now, however, we have to do with the miracle of the bells (fire!). Out of 250 pieces of fire apparatus, 150 are brand new. Out of 29 ladder-truck companies, 23 are new 65-, 85-, and 100-foot aerials. All three fire boats are new. Modern design on land and water at a cost of $3,000,000 in two years. There is not an old piece of equipment in the Bureau of Fire.

The apparatus is housed in 90 fire stations, of which 75% felt the tools of building contractors in 1950. Renovation varies from construction under way on 11 new stations, to repairs and remodelings, until only 14 of the old stations—some 100 years old—still have wooden floors.

Designed for Surroundings

The new stations were designed by architects to suit the surroundings, as the accompanying drawing suggests. They are modern buildings, windowed and artificially lighted, with washable tile walls, and with cabinets and cooking and living arrangements to please the most fastidious. Enter any of these 90 stations and you will see powerful new apparatus awaiting action if not

already engaged in it. From the fire-fighting point of view there are no "show" stations. Re-equipping has been too general to miss any of the stations.

Before the war it was known that rehabilitation was needed and over $300,000 was made available. Then all at once nothing could be purchased. Came 1948 and an adverse report by engineers of the National Board of Fire Underwriters. Then $750,000 was spent for 32 Autocar 750-gallon pumping engines, 24 Ford-Hale booster combinations, 6 American La France 85-foot aerial trucks, 4 Peter Pirsch 85-foot aerials, 7 Fords for battalion chiefs, a rescue truck of International Harvester chassis, and the $175,000 *Bernard Samuel*, first of three new diesel fireboats.

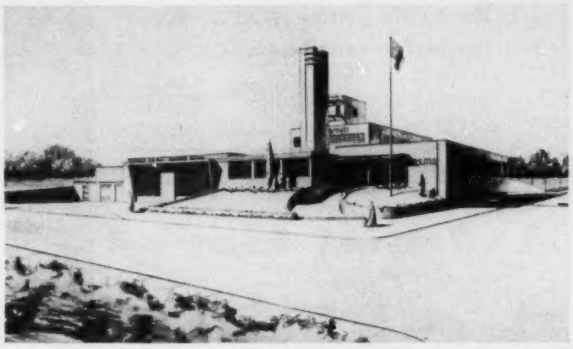
There has been no cessation in this re-dressing of the Bureau. Last year's installations comprised 7 Autocar 750-gallon pumping engines; 8 Ward La France booster pumpers; 13 ALF aerials consisting of four 100-foot, four 85-foot, five 65-foot; 2 Ward La France high-pressure pipeline cars carrying 3½-inch hose and two nozzles, a WLF floodlight wagon, a rescue truck made by Apparatus Fire Equipment Company on an International chassis, 16 Ford sedans, and eight ½-ton and two 1-ton Ford panel-body trucks for emergency purposes, one of which is a grease truck. This was a total of 58 trucks.

This year the city will buy a 65-foot aerial truck and nine chiefs' automobiles. Our four rescue trucks will be supplemented by station wagons for response to calls on heart cases and carbon-monoxide and drowning cases, to save wear and tear on the 12-ton rescue units. Of 2,502 calls in 1950, there were about 1,000 of the type just named.

Apparatus Servicing Crew

A new and important unit is the Emergency Crew, which is provided with a big Army wrecker, the floodlight wagon, panel-body trucks, a refueling tanker, and a special lubricating truck. This crew performs the 101 jobs that save sending equipment to the Bureau of Mechanical Equipment, which handles major repairs for the Department of Public Safety. Speaking of 101 jobs, the actual number performed by the new crew in 1950 was 10,851, including 108 siphon or cellar pumpings, 11 pump tests, 89 wrecker operations, 1,245 hauling jobs, and 9,310 miscellaneous repairs, responding to 48 extra alarms and 40 special calls.

The new diesel fleet contrasts with the former steamboats—a coal burner and two oil burners. The former burned 10 tons of coal a week in summer and 14 tons in winter. The latter used 180,000 gallons of fuel oil per year, each. Just lying at dock, keeping steam up, they used 400 gallons a day at $14,000 per year each. Total fuel cost of these old fireboats was $30,000 a year. Each of the new diesel boats burns 8,000 gallons a year at a cost of $750 apiece.



One of Philadelphia's new combination police and fire stations.

Each of the three boats is propelled by General Motors diesel engines which also drive four DeLaval 1,500-gpm, two-stage centrifugal pumps. On two of the boats, tankage is supplied for 1,000 gallons of liquid foam with a proportioner for 3% solution for a total of 320,000 gallons delivery. They are equipped with two-way RCA radio as are all trucks and cars of the Bureau of Fire.

The over-all pumping capacity is summed up by 146 pieces of pumping equipment as follows: 34 pumping engines of 1,000 gpm, 34,000 gallons; 46 engines of 750 gpm, 34,500 gallons; 7 auxiliary engines of 500 gpm, 3,500 gallons; 52 booster pumps of 200 gpm combination cars, 10,400 gallons; 4 portable pumps of 60 gpm; 3 fireboats of 6,000 gpm, 18,000 gallons. The total is 100,640 gallons per minute.

Each engine company has 60 lengths of hose; the high-pressure cars carry 32 lengths of 3½ inch. Hose purchases during the last two years have amounted to $35,000 in 1949, and $40,000 in 1950, with $60,000 worth scheduled in 1951. The diameter of the rubber hose is 1 inch, and that of the cotton-and-rubber-lined hose is 1½, 2½, and 3½ inches.

Every engine company carries a set of 1-, 1½-, and 2½-inch fog nozzles, and 6-foot and 10-foot applicators. Some ladder trucks also carry a fog nozzle. On the basis of results observed at the Damage Control Center at the Naval Base here, the city bought 84 Rockwood nozzles for fog and solid streams. Fog nozzles will be purchased for the fireboats.

Along with the physical equipping of the Bureau, the men have been given special training. Some 3,000 of them have been trained at the Naval Base. Refresher courses for officers have been given in refrigeration and other practical subjects on which authorities connected with our petroleum, chemical, and other industries have lectured. New publications include a book of rules and a manual on how to make reports. A motor school for drivers of fire apparatus was established, and 350 men passed the tests last year. Civil-defense plans cover nine counties in Pennsylvania and New Jersey, where 316 companies are prepared to cooperate with us and we with them.

Truck-Terminal Report

A GUIDE to the problems created by motor trucks in cities and to their solution is given in Information Report No. 21, prepared by Planning Advisory Service of the American Society of Planning Officials.* Emphasizing the impact of large over-the-road truck-and-trailer units, the report considers problems created by inadequate terminals, the need for rationalizing truck movements, the requirements of truck terminals, location factors, application of the union terminal idea in specific cities, zoning, and other solutions to the trucking problem.

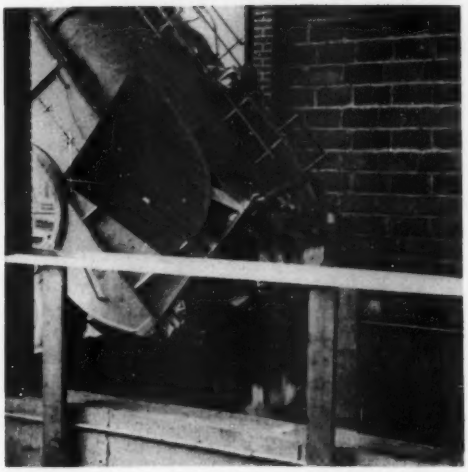
Especially timely is the comparative analysis of the union terminal idea in the Port of New York and in Chicago. The report discusses the relative merits of close-in or out-lying locations and whether or not trucks should be allowed the use of new expressways and parkways. Site requirements of truck terminals are outlined, including provisions for the most effective methods of handling materials.

* Reports available only on subscription. For information, write to the American Society of Planning Officials, 1313 East 60th Street, Chicago 37, Ill.

At Rockville Centre, N. Y., the incinerator has a

Receiving Pit And Belt Line

to simplify refuse-handling problems— burning capacity is increased



Refuse is delivered from the trucks to these receiving hoppers, each of which is large enough for one truck to dump its load. The hoppers are apart from the building.

THE PROBLEM at the Rockville Centre, N. Y., incinerator was the same as is found in almost any floor-dump incinerator operating close to its rated capacity. The solution, developed by Refuse Superintendent Robert D. Woodcock, charts a significant path in refuse handling.

The Rockville Centre plant, a little more than 20 years old, has a rated capacity of 150 tons per 24 hours supplied by three 50-ton Pittsburgh-Des Moines furnaces. The load on the plant amounts to 50 tons per day on an average, accurately determined since every load that enters the plant is first weighed on a Fairbanks-Morse platform scale.

As mentioned previously, the plant was originally designed for floor-dump operations. This meant there was only limited floor space for receiving the refuse and that it had to be pushed into the charging opening by a small bulldozer. With trucks coming to the plant on an irregular schedule, the yard would often be cluttered with trucks waiting their turn at the charging floor. Moreover, the burning was not the best, since the densely packed refuse would drop in a wet mass, difficult to burn, on the furnace grates.

The conventional answer to this was a storage pit and a crane to handle the refuse. But the long-time operation of the plant did not lend itself to this type of treatment. Superintendent Woodcock has a long history of salvage attached to his work. He has an inherent dislike of any waste, no matter where it occurs. And his crews have been trained for many years to watch for portions of the refuse that can be reclaimed. To illustrate how effective it is, out of that 50 tons of refuse per day that his plant receives, his crews can salvage about $90 worth of material, thus meeting the cost of more than half the operation of the plant. Most of the salvaged material is paper, rags, glass, and metal.

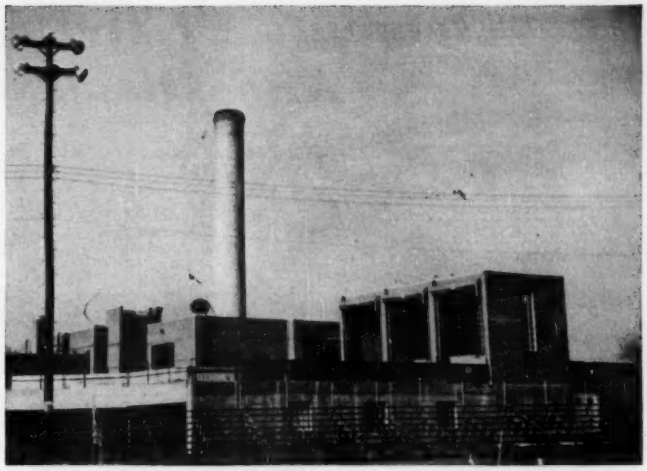
Hoppers have a wood receiving apron, where the trucks dump their loads. This loosens the compacted load, making it easier for the metal belt to handle.

Plant Improvement to Make Salvage Earnings Better

This $90-per-day salvage earning looked good to Mr. Woodcock, and he wanted to make a plant improvement that would offer the opportunity of making the earnings better. A belt-conveyor system, he reasoned, would do this.

The system he developed is built around a Jeffrey conveyor system. Trash

is received in three outside pits, each with room for one truck to dump its load. The pits are hopper-shaped with a 4-foot metal conveyor belt on the bottom. The belt conveys the trash to the charging floor of the incinerator, where it discharges the refuse through chutes to the furnace openings. The chutes operate from a movable carriage, electrically powered, controlled by push buttons, so that any one of the six furnace openings can be charged easily by a single floor operator. There are two pickers on the belt conveyor. Their job is to remove paper, rags, and glass. The paper and rags are baled and sold. The glass also is sold and its removal has the double advantage of improving the incinerator operation. In case of conveyor breakdown, the plant can be operated on the floor-dump principle, as it was prior to the improvement. The installation was designed and constructed by William Neil, constructor. New York City.



This 20-year-old incinerator at Rockville Centre, N. Y., lies adjacent to a municipal baseball diamond. The new receiving building is located at the right of the plant. Observe the absence of smoke from the stack. At the time the photograph was taken, the plant was operating at its top rated capacity.

Problems Upon Adoption of This Type of Refuse Handling

Certain problems had to be overcome when this type of refuse handling was adopted. Most annoying was the tendency of the refuse to "bridge" over the conveyor belt. Mr. Woodcock overcame this by placing an inclined wood panel in the pit for the trucks to dump on. When the refuse hits the panel, it breaks into smaller segments and rolls to the bottom of the pit without difficulty.

There have been certain advantages also. By the time the trash has passed over the belt and has been examined by the pickers, it drops into the furnace through the chute in a loose, fluffy condition. This has meant that burning has been easier and that there has been a noticeable improvement in the quality of the incinerator residue. It also has made it possible for the furnace to operate at substantially higher temperatures, averaging about 1,800° F., and these higher temperatures have meant that the furnaces have a higher burning rate, and thus can handle more refuse. Mr. Woodcock estimates that whereas 50 tons per 8-hour shift were all that the plant could handle prior to the improvement, now it can handle 60 tons easily.

Simplified Operations

The arrangement has simplified operations around the plant also. Prior to the installation of the dumping pit and belt line he had to keep 18 men in the plant. Now he is able to operate with a crew of 12. In detail, his crew now looks like this:

1 man at the dump bin
1 man on the charging floor
2 pickers
1 man to bale paper and rags
1 truck driver
4 men in the fire room
2 extra men

No Nuisance at the Diamond

The fact that the incinerator today burns without nuisance can be demonstrated amply by the location of a popular municipal baseball diamond on the plant property. This has been in use for several years without complaint by the people who use it.

Thus, with the newly constructed receiving pit and belt line, Superintendent Woodcock has made it possible for the trucks to discharge their loads in a quick, orderly manner. He has aided the charging of his furnaces so that they now burn better and require less manpower, and he has made his profitable salvage operation easier.

Superintendent Woodcock is inspecting a bale of salvaged paper, which is part of a $90-per-day salvage earning. Half the plant's operating cost is met by salvaging work of this type.

Refuse is fed to the furnace by this movable chute, after passing two picking stations. The refuse is loose and easily burned when discharged. Sixty tons can be handled per 8-hour shift.

The Elements Of Refuse Collection And Disposal

Part II—The collection crew and its equipment

By WILLIAM S. FOSTER
Engineering Editor
The American City

AFTER deciding how frequently refuse should be collected, the next step is to plan for the collection crew. If you use the modern closed trucks, a driver and two men will do the work nicely. If you still stick to the use of open trucks, you will need a third "top" man to arrange the garbage and refuse in the truck. If you are able to persuade the householder to put the garbage can on the curb, you will reduce collection costs probably about 25%. However, some communities dislike streets lined with garbage cans and make a back-yard collection because of its neater appearance.

How Collections Operate

If back-yard collections are what the people in your community want, many cities have found that they can step up operating speeds by using a "set-out" crew that brings the cans to the curb for the truck crew.

A simpler method is in use at Wauwatosa, Wis.[1] Collection crews are equipped with rubber-tired carts so that they can collect from several houses without having to make a trip back to the truck with each can. A somewhat similar method is in use in the Washington Suburban Sanitary District. This is a District located in Maryland, formed to supply suburban Washington, D. C., with water, sewage, storm drainage, and refuse service. The crews here avoid extra trips to the collection truck by using burlap squares measuring 78 by 81 inches. A square will last five days and will hold 80 to 160 pounds of refuse. Generally, the square will hold garbage and trash from two to five houses.[2]

One of the garbage-can liners which are being used in Montevideo, Minn.

Frequently, we find among cities a policy of assigning the collections on the basis of the "task" performed, rather than so many hours of work per day. If the crews complete their work promptly, they are released early. However, if the work is delayed they are expected to stay on the job until it is finished. In either case they get a day's pay—no more or no less. This works very well, except that it requires good judgment on the part of the superintendent to decide just what a fair day's work is, in relation to the number of collections made.

Saving in Number of Trips Necessary

Berkeley, Calif., gives some guidance in this matter. This city has found that a three-man collection crew can make 405 calls in hill country, 480 calls in flat areas, and 360 calls in the business districts daily. The crews use 9-foot square burlaps to make multiple collections from homes, similar to the way the Washington Suburban Sanitary District crews do.[3] In Yonkers, N. Y., each refuse-collection crew will serve a minimum of 200 single-family homes daily. In Hackensack, N. J., a crew will average 385 calls.

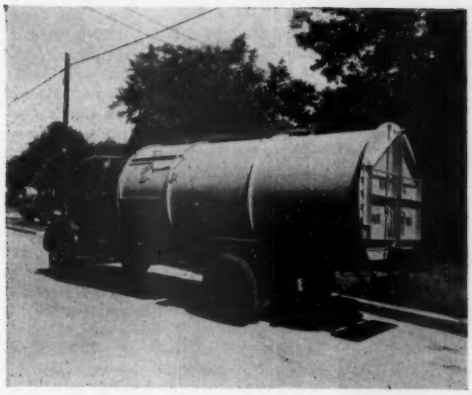
One should not forget that the garbage can which is inadequately cared for is one of the weak links in today's community-health programs. And it has been so branded before responsible gatherings of public health officials. Joseph H. Coffee, of the United State Public Health Service, has labeled it the chief obstacle in the path of successful fly-control operation, and has gone on further to identify the fly as a definite vector in health problems.[4]

To help prevent garbage cans from

[1] References refer to bibliography on p. 134.

Open trucks will require a great deal of heavy lifting, as well as a "top man," who has to wade in the rubbish.

With burlap squares, crews collect from several houses at a time in the Washington, D. C., suburban district.



In San Antonio trucks operate with a packer plate at the rear, which pushes the material out the end of the body.

In Tuscumbia, Ala., each emptied can is given an application of DDT in order to control any insect-breeedig.

being fly-breeders, at least two cities have adopted the policy of spraying the cans with DDT or other insecticides after each emptying. One of the cities is Russell, Kan., the other, Tuscumbia, Ala.[5]

Another policy that has helped to keep the cans clean and sanitary is the one developed in Montevideo, Minn. In this city, Seymour Himle, Superintendent, developed a garbage-can liner, made of paper, that catches the garbage and prevents it from soiling the can. It also keeps the garbage from clinging to the sides of the cans in winter.[6]

Business-Area Collections

Thus far, we have discussed collections from single-family residential areas. Our next question is how to collect from large multifamily dwellings and from business areas. Is there equipment that will meet these requirements?

The answer, based on experience in a growing number of cities, is yes. The equipment to be used is a special, large container, built so that it can be picked up by a truck with special lifting arms.

Typical of the use of these big containers is the experience of Clinton, Tenn.[7] This city uses 6-yard Dempster Dumpster detachable bodies, leaves them in the business district, and then picks them up at the end of each day to empty them.

Cincinnati, Ohio, also uses these large units at the Union Terminal railroad station, at the zoo, and to service circuses when they are in town.[8] At the Union Terminal, the city owns one unit and the Terminal owns one. The city leaves an empty and picks up one that is full. Officials have estimated that it takes only five to 10 minutes to place the empty container and pick up the full one. Previously, it took half an hour to collect the refuse in all the small cans. Ralph Taylor, Superintendent of the Waste Collection Division, reports that the city services 16 of the larger public schools with the units.

Richmond, Va., also used these big containers for collections in the business areas.[9] In this city, the business houses purchase the large Dempster Dumpster units, and the city owns the collection trucks. The business houses are almost unanimous in expressing approval of their use.

Boston uses the Dempster Dumpster units in the business and market areas, and also at strategic street corners where they not only collect market refuse but street sweepings deposited by white-wings.[10]

Boston has found that the big containers are most useful in providing a suitable method of refuse disposal in crowded rooming houses and tenement areas. In these districts, ordinary refuse-disposal methods break down. There simply is not room enough for all the garbage cans that actually are required, and the economic status of the people in the area prevents them from adopting refuse-disposal methods similar to those in use in more expensive apartment districts. By placing the big containers in suitable locations, they have found that the residents will go out of their way to use them, and often will become indignant if they hear of plans to move the containers to new locations.

Baltimore, Md., also employs the containers to clean up its market areas.[11] The city has twenty-eight 10-yard units and three truck hoisting-rigs. Each merchant is assigned a definite container in which to put trash. The merchants are glad to use them. Whenever a truck takes away a full container, it leaves an empty one. The program was developed by William P. Fannon, of the Bureau of Sanitation.

This carries us quite naturally to the subject of refuse-collection trucks. Which are the best, and how many are required?

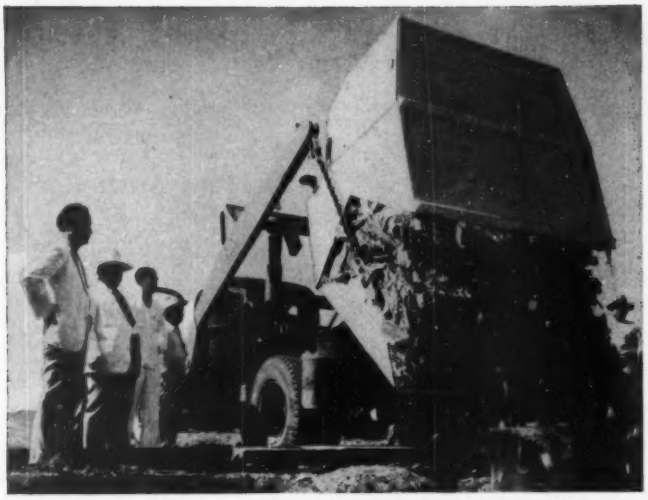
To start off, let us recognize at the outset that for economy of operation it is hard to beat a good crew working with an open truck. For that matter, it probably would be hard to beat a good crew working with a horse and wagon. But when you are dealing with a subject that touches the health and well-being of the entire community, you don't guide yourself by the dollar sign.

Truck Requirements

Fundamentally, the trucks should have ample capacity. They should be watertight to prevent nuisance-creating garbage juices from dripping onto the pavement. They should be covered to avoid blowing papers and other particles of rubbish from causing nuisances. And they should present a smart appearance. The trucks travel through the entire community and should, of course, be neat and sanitary. One would not have an open dump in the center of a well-kept neighborhood. One would not respect a police force that looked like a group of tramps. Similarly, one should expect a sanitation service of this type to look like a "sanitation" service.

On this basis, therefore, we must reject the open truck and consider the covered bodies. One very terse comment about them comes from J. B. Wilson, former Director of Service, Louisville, Ky.[12] Mr. Wilson said that the covered garbage truck is a lot like democracy: the best available at the moment, but still subject to improvement.

Some trucks are simply covered dump bodies. The refuse still must be lifted shoulder-high. The cover is no more than a shelter, and actually makes



When war-torn Manila was rebuilt, the latest equipment was installed. This Dempster Dumpster unit serves market areas, discharges into a sanitary fill.

the truck more difficult to load than one with an open body. Nevertheless, the fact that the load is positively covered and confined is a step forward in environmental sanitation.

Other truck bodies have lower loading points, so that their refuse-handling problem is not so great. Sometimes, this is made possible by a trough that receives each container of refuse. When the trough is full, hydraulic arms lift the refuse to the top of the truck and drop it in.

Compactor Trucks

To increase the truck load, many bodies are equipped with compactor mechanisms of some type. These keep packing the refuse until there is a dense, solid mass, and they carry as much as the hand-packed open truck. A good crew with a covered, compressor-type truck can do quite well in turning out a good loading record.

Baltimore, Md., for example, replaced 12-yard, open-body trucks with 9-yard, Gar Wood compressor-type closed bodies.[13] Superintendent W. P. Fannon has estimated that the closed bodies have reduced operating costs enough to pay for themselves in three years.

We can turn to Newark, N. J., to see how dense a load the compressor-type truck bodies can produce.[14] John Flockhart, Street Cleaning Engineer, supplies the information that Gar Wood compressor-type bodies load Newark refuse to a density of 460 to 620 pounds per cubic yard. In the open trucks, he reports density of 280 to 400 pounds.

Hackensack, N. J., found that the compressor-type trucks made four trips to collect 5.2 tons of garbage and 2.25 tons of ashes and rubbish in six hours of operation.[15] The open trucks over the same route required eight hours and made nine trips.

The use of the closed, packer-type trucks also allows one to reduce the size of the collection crew. The open truck requires a "top man" to unload the containers and arrange the rubbish so that it makes a good, solid load. Worcester, Mass., for example, reduced its refuse crew by one man and loaded 50% more refuse on a truck.[16] However, the crews noted that maintenance costs are greater than they are for open trucks, since there are hydraulic lines to maintain and other equipment to care for. In bad weather, the city equips its crews with rubber storm suits, similar to those worn by the Navy. It also gives the crews ice creepers when they work in icy weather.

Sturgeon Bay, Wis., replaced its open trucks with covered, Gar Wood load packers.[17] During a six-month period, a driver and two men handled all refuse in a 45-hour week. One pick-up was supplied for residences, and two in business areas, necessitating five to six loads per week. Formerly, the job required a 60-hour week, and had to be done with an open truck making 40 to 45 loads.

Kansas City, Mo., also has noted efficiencies of covered compactor-type trucks.[18] For example, when collecting refuse from the city hospitals, airports, and municipal auditorium, the crews needed six hours with open trucks carrying 3 to 4 yards each. This was cut to two hours by the use of 10-yard packer trucks.

Thus, we see from this discussion some of the principles that crews should follow when conducting collecting work efficiently. We also see how an increasing number of cities are collecting refuse from market and industrial areas. And we have an analysis of the merits and difficulties associated with the various truck bodies. In succeeding discussions, we will analyze disposal methods.

Trucks pictured above are among those purchased recently by New York City.

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Purchasing for a Boom City

In three years, El Paso has bought 123 miles of pipe, 50 automotive pieces, and 99,983 other items

By B. E. LUHM
Purchasing Agent
El Paso, Texas

B. E. Luhm

THE CITY OF EL PASO, Texas, a thriving municipality nestling among the southern foothills of the Rockies, has a population in excess of 130,000 (excluding approximately 100,000 military personnel); an area of 50 square miles; a corporate value of over $186,000,000, and is governed by a City Council consisting of a Mayor and four Aldermen elected at large.

On October 16, 1947, the City of El Paso organized its first central purchasing department under the supervision of the writer who, on November 27, 1947, installed the present purchasing procedure consisting of a Purchasing Agent, Secretary-Receptionist, and Purchase Record Clerk. On March 1, 1951, a Voucher Clerk was added to make ready the payment of all invoices covering operating supplies. During the last year, we handled purchases in excess of $5,000,000, of which over $2,500,000 was for operating supplies. The cost of purchasing was approximately $11,000. Courtesy discounts are considered by the city as miscellaneous revenue and are credited to the Purchasing Department expenses. During the last year this department was able to effect courtesy discounts far in excess of its operating costs.

A Serious Problem

Rapid expansion, whether it concerns a small municipality or a corporation, constitutes a serious problem for purchasing agents, but more especially for purchasing agents of small municipalities operating on limited budgets. The problems confronting the purchasing agent due to rapid expansion are not thoroughly understood by the average American citizen. The purchasing agent's problems in a small municipality may be compared with those of the average American citizen. The home has to operate on the wage earner's salary, and when there is an increase in the family, a new refrigerator to be purchased, or unexpected sickness, it is confronted with problems similar to those of a municipality when it is expanding. The homeowner, like the city, has two choices: he may either cut expenses in some manner or borrow money to finance the extra burdens. The average American citizen looks upon municipal expansion in this manner: he sees new houses and commercial buildings under construction, more cars on the streets, and new faces in the churches, without realizing the problems these cause the average municipal government.

After making the above statement, we would like to tell something about the expansion El Paso has made within the last three years. In 1948, the city limits of El Paso contained 14.7 square miles; today, more than 50 square miles. Within the last three years there have been more than 5,000 homes, commercial establishments, and churches built in this area. As these subdivisions were built within the city limits, it was the duty and responsibility of the city to furnish streets, water and sewer mains, refuse collection, and police and fire protection. In order to furnish this service, the city was required to build additional fire stations and completely furnish them with fire-fighting equipment. Fifteen new refuse-collection units, 10 new police patrol cars, eight police motorcycles, one 100-foot aerial truck, and four 1,000-gpm pumping engines were purchased; all in addition to the purchase of over 300,000 feet of cast iron pipe ranging from 4 to 30 inches; 100,000 feet of copper pipe from ¾ to 2 inches, and over 150,000 feet of clay sewer tile ranging from 6 to 12 inches. Present orders total over 100,000 feet of cast iron water pipe, half for immediate delivery.

In addition to these, there were purchased dump trucks, heavy-duty bulldozers, payloaders, and motor graders for the Street Department; heavy-duty bulldozers and other equipment for the Sanitary Department, and trenching machines, heavy-duty trucks, and other equipment for the Department of Water and Sewerage. The purchase of this equipment was in addition to a great quantity of operating supplies. The Purchasing Department wrote specifications and advertised for bids on all this equipment.

During the last year we purchased over 1,000,000 gallons of gasoline for resale at our International Airport. Also, in 1950, the City of El Paso spent about $750,000 for an addition to its water-treatment plant, and this year has purchased land and will build a dam at a cost of approximately $2,000,000, in order to supply El Paso with additional water.

As this office purchases over 100,000 different items for its various departments, you can readily see why purchasing agents are now being accepted as part of top management.

Making Defense Part of Peacetime Prosperity

A RAPID, planned expansion of the nation's basic productive might is America's new and daring weapon against the threat of war, according to Chester H. Lang, General Electric Company vice-president.

"It is not girding up for war," he emphasized. "It is girding up for peace. As far as I know, no nation ever has tried it. America is trying something new and daring in this old game of power politics. Where the normal historic reaction is simply to build a bigger army — America has undertaken a much more imaginative task: She will deliberately grow! Private industry will do 90% of the job, with an outlay of nearly $70,000,000,000 for expansion and improvement planned during the next three years alone. Obviously there is a big difference between our present undertaking and an all-out war economy.

"Production, arming brave men willing to fight, is America's key to survival against communism. We can't outnumber them, but we can outproduce them."

Municipal
Public
Relations

The City Tells Its Story

By HENRY DAVIS NADIG

Executive Director, Association of Municipal Public Relations Officers

Public relations is a major part of city planning

CITY planning is more than half public relations: when and where planners recognize this and purposefully employ proper public relations techniques in the process of planning, they are bound to achieve advancement of planning's objectives.

To some professional planners, to some city, town, county, or regional planning boards, this may seem a pretty strong statement. Those, quite possibly, should take it most seriously!

For too long, planners as a rule have failed to realize the importance of public relations as an integral part of the planning operation. The exceptions only serve to prove the point that real success is dependent upon effective public relations activity.

In approaching the question of public relations in planning, it seems to me that the first thing to do is to establish what planning is and see what sort of thing we have to work with. What is planning—specifically, city planning—and what are its functions?

City Planning

City planning is a realistic method of preserving and extending the things you value most in and about your community. Soundly applied, planning provides a basic program of insurance against deterioration of your neighborhoods and of your whole municipality. Planning's purpose and objective, therefore, is the achievement of orderly growth in the most desirable manner.

Planning's function is continuously to provide the means by which proved techniques—such as zoning, subdivision control, redevelopment, the capital budget, and the master plan—may be consciously applied to prevent the encroachment of incompatible and depreciating land uses and to encourage and direct economical and improved residential, business, and industrial development.

Involving the setting up of a practical, realistic, safeguarding development program, planning gives your municipal government a protective arm able to cope with forces which are constantly tending to break down the natural values and the best standards already existing in your community.

To accomplish its object and to fulfill its function, planning requires three things: (1) a planning board or commission of alert citizens serving without pay; (2) a paid technical staff, and (3) continuous citizen participation in planning.

The job of the planning agency (the planning board with its paid technical staff) is two-fold; it is at once a job of research and fact-finding (of analysis charting, and mapping), and a job of promotion and public education (of public relations)—a job of dramatizing results of fact-finding and recommendations emergent from the facts.

Integration Required

But public relations cannot be a blocked-off or segregated part of the planning operation, to be undertaken only when the technical planners have completed a survey or a map or when the agency comes up with recommendations. It is an essential part of planning from the very start.

Public relations techniques are valuable in the accomplishment of many of the planner's technical procedures, such as surveying, mapping, and fact-finding. Actions taken by planning technicians without regard to the public relations involved have sometimes wrecked good plans or portions of them.

Don't get the idea that I am minimizing the importance of the planning technician—of the planning director and his staff of skilled draftsmen and analysts—or of the intelligence of any experienced planning board. But the fact is that public relations is a factor every time a technician goes for information to the public or to a segment of the public; every time he answers a question from an outside individual, and every time he makes a technical presentation to the public.

Public relations should be an integral part of the planning deal. It should operate on the policy level in order to protect and advance both the specific objectives of the board and the continuing functions of planning. Until this is recognized to the point of accomplishment in the city planning operation, needless mistakes and *faux pas* will be recorded over and over again.

There are several ways that public relations can be made a realistic part of planning. First of all, a planning board may be so fortunate as to have a chairman or member who is extremely public-relations-conscious and who has a natural ability in public relations. Such instances are rare but they do exist, just as in some cities the mayor or city manager is a good public relations practitioner.

Where a fortunate circumstance like this exists, the board already has public relations on a policy level. It remains only to give careful heed to the know-how expressed, and to follow through with specific MPR techniques. Sometimes these may be handled personally by the particular board member, depending upon the size of the municipality.

In the larger cities, the planning board, if it is to do a real job, should somehow or other acquire public relations advice and assistance. If the city has an MPR officer in the local government, he should be brought into the planning picture as much as possible and the service of his office should be fully utilized. It is part of the MPR man's job to assist each and every other branch of the municipal government—and the planning department is a very fertile field for him.

Retaining a Counsel?

If the municipality does not have an MPR officer or even an MPR counsel who can be called upon, the planning agency must then consider the question of retaining public relations counsel on its own or of placing on its paid staff a researcher who can also double in the over-all phases of public relations, or of letting the planning director handle the public relations.

It seems unlikely that a staff man could be wholly effective: the board might be hampered in many policy decisions involving public relations by the very nature of the staff man's position. Yet he could perform a great many essential services.

On the other hand, if the planning director were by nature a good public relations man, because of his close rela-

tionship with the board he could be of real practical value. The planning director is the logical contact man with the public by virtue of his position. Part of his training and experience has been in dealing with the public—and if he is adept, the board is that much better off.

The preferable alternative is that of retaining public relations counsel. This relieves both the board and the planning director of responsibility, and, at the same time, provides both with the benefit of the necessary experience and know-how needed to accomplish a full impact upon the public, and a thorough appreciation by the public.

Citizens' Associations in the Planning Program

But there is still a fourth opportunity —if not exactly an alternative. Existence or creation of a citizens' planning association can provide the channel for much good public relations activity on the part of the planning agency.

A citizens' association by its very nature is a liaison between the board and the public. Depending upon the rapport between agency and association, the latter can be not only a preliminary sounding board for the planning agency, but also the instrument for interpretation and promotion of the planning program.

However, one always runs up against the fact that, by and large, a citizen planning association likes pretty much to retain its own independence, its own detached and objective viewpoint upon the procedures and the products of the planning agency. Therefore, it could well be that a planning agency's dependence upon a citizen association as a continuing public relations' arm might not always produce sure-fire follow-through from the agency's angle.

This all brings us right back to the original concept on municipal public relations set forth in this column: that it should be a part of local government operation to be able to do a continuous and proper job for the municipality and for each and all of its departments, divisions, or branches.

The planning board, while its powers generally are those of recommendation only, is an important branch of municipal government. As such, it ought to be able not only to maintain its municipal integrity but also to set forth and put forth its opinions and recommendations with the best possible techniques and procedures. And although a planning program must progress as a thing of the people to be successful, the planning agency itself must strive for impartiality, fairness, and thoroughness in working for the best possible development of the municipality.

When a planning board is newly constituted or reorganized, its first obvious job is to take stock of its own purpose and objectives and to understand these thoroughly. Planning boards sometimes suffer from a fundamental lack of knowledge as to just exactly what the agency exists for and what it is supposed to do, simple as this may seem.

Good public relations implies the kind of stock-taking that clears the table for action by the agency's early arrival at unanimous agreement on scope and purpose and on a general planning program. How the agency regards itself, and how well this concept is interpreted to the public may determine whether there will be smooth or rough sailing ahead.

Now it should hardly be up to a public relations person, as such, to tell the planning board *what* to do in the way of technical planning for the municipality. It is the province of the planning director, planning consultant, or technician to suggest to the board, on the basis of proved practice and local factors, what steps might best be taken and what might properly be included in a planning program.

But when the planning agency "knows itself" and is ready to clarify its position to the public, your MPR man can come in with the *how* of accomplishing this for the best results. A thorough understanding on his part will be followed by public relations action in the interpretation of the agency to the public. If he has been sitting in at initial meetings, his understanding will have been enhanced from the start, and he will be able to proceed more effectively.

Once the first correct public relations steps have been taken on behalf of the planning board's position—with regard both to the municipal government and the public—the public relations phase of the planning program moves into specifics pertaining to the several functions and operations of city planning.

Functions

The special functions of public relations in city planning are: (1) to inform the public on developments, as occurring, within the framework of the planning operation; (2) to provide information liaison between the planning agency and other governmental departments; (3) to obtain and bring to the planning board public reaction regarding proposals and activities of the board; (4) to produce appropriate printed material regarding planning and development; (5) to assist in the arrangement and conduct of public meetings, and with exhibits, displays, and open-house programs and, generally, (6) to provide "follow through" for making planning a continuous process.

In carrying forward with these functions, public relations will utilize every feasible technique and medium. It will produce material for the press and radio, arrange radio and television shows, provoke special news and feature stories. It will capitalize upon public hearings and exhibits. It will utilize both motion pictures and stills wherever practical.

Public relations will work with local organizations to help bring them into the planning picture, and it will arrange for speakers at various meetings. It will develop special techniques to meet special occasions. It will produce clear-cut literature on the planning operation, including such things as posters and car-cards, if feasible. It will endeavor to stimulate public interest through open-house programs and by periodic meetings with representatives of local organizations.

Can't Afford?

It is no longer a question of whether planning agencies, at least in the fair-sized cities, can afford to spend time, effort, and money on public relations for planning. It is rather a question of how much longer they can stand it without real public relations work, considering the value of consciously operated public relations to planning, and also considering the over-all benefits of good public relations to the agency itself, to the city government, and to the public as a whole.

In contemplating the matter of public relations on a professional basis, both the planning agency and the local government should consider the multilateral character of the planning board; its activities cut across and through all departments, and with achievement of an interdepartmental accord, every department stands to gain if the planning department is fully implemented.

Skillful public relations in the planning division ought to: (1) sharpen the planning process, (2) increase active citizen interest, (3) aid the municipal government generally, and (4) enhance the character of city growth. This is entirely possible as and when the planners come squarely to grips with the fact that public relations is more than half the battle.

Utopia

The president of Bates College was requested to "Define utopia, briefly, but in specific terms without the philosophical rigamarole."

His answer: "1950 income, 1933 prices, 1926 dividends, and 1910 taxes."

—From Toledo *Municipal News*

Planning Parks and Recreation

(Part II of a Two-Part Article)

PART I of this article, which appeared in the March issue (see pages 100, 101, and 102), discussed the planning of community recreation centers and means by which the city should estimate its own projects toward filling this very important need.

By THOMAS C. JEFFERS
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12. Recreation Areas

(a) THE PLAYGROUND.—A neighborhood playground of 3 to 5 acres should be provided within walking distance, usually not over half a mile, of every child. If this playground can be located at or adjacent to an elementary school, the facilities of the playground and the school, including indoor facilities, can be used jointly by both the school and the people of the neighborhood. This will result in many economies, in that it will not require a duplication of facilities, and will lead to a maximum use of all buildings and areas.

The neighborhood playground was originally conceived as an area to meet the needs of children of elementary-school and pre-school age. More recently, however, its use has been expanded to provide for the short daily leisure-time needs of the entire family, although its heaviest and most dominant use will be for children not able to go to the more distant playfield. The following lists facilities with their necessary equipment:

Paved Area—36,000 square feet. Multiple-use court area, usually adjacent to or near the school or shelter building, for tennis, basketball, volley-ball, paddle tennis, shuffleboard, etc.; also, an area or ring for roller-skating and small children's bike-riding.

Grass Areas—80,000 square feet. Open play areas for games of low organization and open area for softball, soccer, badminton, etc.

Apparatus Area—10,000 square feet. Twelve-foot swings, 8-foot slides, jungle gym, see-saws, balance beam, horizontal ladder, horizontal bar, etc. In many cities the minimum amount of apparatus is furnished and a more active participation in organized games is encouraged.

Small Children's Area—10,000 square feet (for pre-school age). Sandbox, small swings, 6-foot slides, junior jungle gym, large building blocks, playhouse, low drinking fountain, benches and tables for use of nurses, mothers, or older sisters, small shelter for carriages and children in case of sudden rain.

Other Facilities—Horseshoe or quoit courts, sheltered area for handicraft, quiet games, and story-telling, spray-pool area (wading pools are objected to by many experts as unsanitary), straight-away running track for 50- or 100-yard dash, jumping pits, drinking fountains, a flagpole, and a shelter house or playground building containing toilets (with outside entrance), playroom, storeroom for equipment, and director's office are minimum facilities.

The various use-areas should be separated by walks and fences or hedges. The entire playground should be protected by a fence with gates at controlled points, and a strip provided outside the fence for the planting of trees, shrubs, and vines. Shade trees should be planted both around the perimeter and at strategic and safe locations within the playground, and especially around the small children's area and the sheltered area for handicraft and quiet games. The planting of trees, shrubs, and vines around the perimeter will, in large measure, prevent the playground from being objectionable to near-by residents.

(b) TOTLOTS.—Occasionally, if the playground is not accessible to all of the children of a neighborhood, a small auxiliary playground or totlot for the younger children is established for their use. This may vary in size from ¼ acre to one acre, depending on the number and age of the children it is intended to serve. The facilities need not be so extensive on this area, and it is usually supervised by parents of the children in attendance. Suitable toilet facilities and a small shelter are desirable.

This type of facility is especially desirable at both public and private housing projects and is generally provided by the developer.

(c) THE PLAYFIELD.—An area of 10 to 20 acres or more is needed, designed to provide for the widest diversity of activities for the entire family and including a children's playground. For the whole community there is needed one acre of playfield for every 800 people and a playfield should be provided not over one mile from every house. If the playfield is located independently of the neighborhood park, at least a part of the area should be developed to have a park-like character.

For economy reasons, the playfield is often located adjacent to a junior or senior high school so that the facilities of each may serve both school and community purposes. If not located adjacent to a school, a recreation building or field house will be an essential part of the development. Below are listed specific areas and their equipment:

Open-field Area—A major part of the area (a minimum of 5 acres) should be developed for baseball, softball, football, soccer, field hockey, etc. One baseball diamond will usually be needed for every 6,000 people and one softball diamond for every 3,000, depending upon the local interest in these two sports. The same area may be used in the fall for football and other field sports. A grandstand or movable bleachers would be desirable.

Grass Areas—A separate grass area of about 16,000 square feet should be provided for volley-ball, croquet, badminton, and other court games; also, a separate grass area of at least one acre for older girls' and women's use.

Paved Area—Court area, multiple use.—There should be 20,000 square feet for basketball, volley-ball, badminton, paddle tennis, shuffleboard, etc. Tennis courts.—An area of 48,000 square feet will provide 8 courts. One tennis court is usually needed for each 2,000 people.

Children's Playground—A complete children's playground, including a small children's area, should be provided.

Picnic Area—A wooded area for picnicking, with benches, tables, and several fireplaces for cooking, is very desirable; also, a quiet shady area for oldsters to sit and play quiet games.

Other Facilities—A quarter-mile track with straight-a-way for 100-yard dash and facilities for other track and field events. An archery court, so located as to be safe. An outdoor theater for concerts, theatricals, pageants, etc. A swimming pool is often located on a part of or adjacent to a playfield area.

These facilities are all desirable, and the major portion of them should be included in every playfield layout. Drinking fountains are essential; also a flagpole. As at the neighborhood playground, the different use-areas should be separated by walks and fences or hedges. The entire area should usually be fenced and landscaped by proper and adequate planting of trees, shrubs, and vines.

The various use-areas should be located in good relationship to each other so that easy access may be had from any area to any other area at all times. An area for car-parking is another desirable facility which should be provided.

13. Recreation Building or Field House

This is an essential facility unless the playfield is located at a school which is planned to provide the needed indoor facilities. These indoor facilities should include a gymnasium with folding seats for spectators, a playroom, a storage room for supplies and equipment, toilets (preferably with direct entrance from outside), a director's office, clubrooms, craftrooms, a snack bar and kitchen, and an auditorium with stage, seats, and coat-check room. Showers and dressing rooms with lockers should be provided if possible.

Auditorium—An auditorium or assembly hall is usually provided for each 20,000 of population.

Gymnasium—For each 10,000 of population.

Social and Play Room—For each 10,000 of population.

Informal Reading and Quiet-Game Room—For each 10,000 of population.

Indoor Game Room—For each 10,000 of population.

Arts and Crafts Room—For each 10,000 of population.

Multiple-Use Clubroom—For each 5,000 of population.

In the design of modern school buildings, these facilities are usually being included for both school and community use. It is desirable that the building be so planned that when the facilities are in community use, the remainder of the building, classrooms, etc., can be closed off to prevent trespass and nuisance.

If there is to be a swimming pool and it can be located adjacent to the recreation building, the dressing rooms, lockers, etc., might also be included in this building.

The recreation building must be centrally located in relation to the outdoor facilities and must also have easy and adequate street access with sufficient parking area near by

14. Special Recreation Facilities

(a) Stadium.—This facility is intended primarily for highly organized sports and is usually located either on a separate tract of land or at a high school if sufficient land is available. The stadium should not be permitted to encroach on other outdoor needs. A limited type of athletic field may be provided on a tract of 5 acres, but a satisfactory stadium for competitive events, including seating accommodations and sufficient parking space, may require as much as 15 or 20 acres. Toilet facilities, team dressing rooms, and showers are necessary and might be provided under the stands. Football, baseball, running track, and other field events are usually provided for.

Adequate lighting for night use is desirable so that maximum use of the facilities may be had.

(b) Golf Course.—Publicly owned facilities are often provided for community use. One nine-hole course will be needed, to serve a population of 27,000, which will require 40 or 50 acres. One 18-hole course would be needed to serve a population of 50,000, which would require a minimum area of 100 acres.

(a) Swimming Facilities.—Sufficient facilities should be available either at beach or pool to serve 3% of the population at one time. About 12 square feet of water space is needed for each participant.

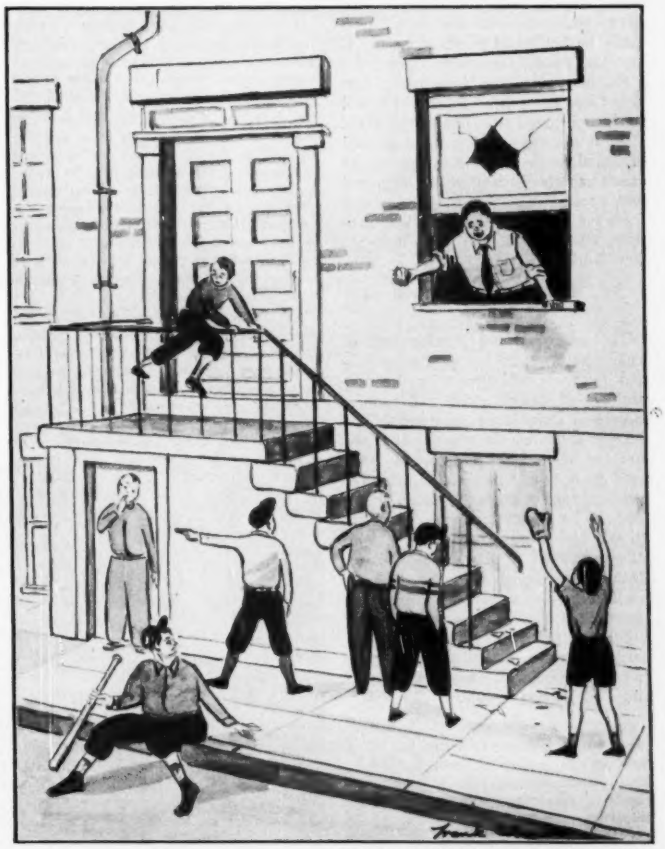
A swimming pool is needed for each 50,000 or less of population and sufficient space will be needed at the site to provide for adequate parking, sunning areas for swimmers, and space for spectators and non-participants. Some seating should be available for swimming-meets and water pageants. Removable bleacher-type seats are satisfactory.

The location should be reasonably central and easily accessible to all residents in the community it is intended to serve. It should, of course, be lighted for night use. A combined indoor pool, which may be opened into a partially outdoor pool for year-round use, is being planned in some communities.

In no case should an indoor pool be located in the basement of a school or other building where sunlight and adequate ventilation is difficult if not impossible to obtain.

If a public bathing beach is available, adequate showers, dressing rooms, lockers, and parking areas are essential, and facilities for picnicking are desirable, including tables, benches, etc.

All swimming facilities, whether beach or pool, must be in accordance



DRAWN FOR THE AMERICAN CITY BY FRANK COLOMBO

"I'll give you the ball back if you promise to play in front of the Mayor's house!"

with state health department standards and regulations.

(d) OUTDOOR THEATER. — One large outdoor theater will serve a population of 100,000. This would be for community or city-wide use and would not supplant the need for the small outdoor theater or council ring for neighborhood use. The larger community facility should be of sufficient size to provide unlimited opportunity for outdoor plays, concerts, pageants, and story dramatizations. It might be included as a feature of a large park area, but must be easily accessible by adequate streets or roads and have sufficient parking space. Lighting for night use is essential, and adjacent sheltered areas for protection during sudden rain-storms are very desirable.

15. Lighting of Areas

All park and recreation areas that are open for public use during the evening should have sufficient lighting to make them safe. Floodlighting for sports and game activities should generally be limited to playfield areas. If any playgrounds are to be lighted for night use, care should be taken that only those areas are lighted which will not be a nuisance to adjoining residents.

As to the type of lights and amount of illumination required for particular sports and classes of play, it is suggested that specific information be requested from the National Electrical Manufacturers Association, 155 East 44th St., New York 17, N. Y.

16. Planning of Individual Areas

The planning and development of each area acquired for park or recreation purposes will present a different problem of design which will require individual analysis and treatment. The purpose for which the area was acquired and the needs it is proposed to serve must be decided upon before any plan can be made for its development. Planning, to be effective, must fully utilize all the possibilities of the site and no standard design or plan can be utilized. Each site requires the skill and resourcefulness of a designer trained and experienced in this kind of planning.

Certain principles are applicable, however, in the design of every park and recreation area. The more important of these are as follows:

(a) *Effective use of land.*—Seldom is ample space available on a site for all of the facilities needed or desired. Therefore, considerable ingenuity is required to obtain the maximum use of the space available without congestion. Multiple use of some of the areas will prove economical.

(b) *Adequate areas and facilities.*—It is important that sufficient space be provided so that the various uses and facilities can be of standard dimensions. The more essential areas and facilities that are in greatest demand are first provided for; less essential but desirable uses receive secondary consideration. Any facility which would serve only a few players and be out of use a considerable part of the time should not be provided on public areas.

(c) *Multiple use of areas.*—Where practicable, areas should be designed to provide several different uses, either at different seasons or to supply the needs of different groups. This is especially important if the size of the available area is limited. In any case, multiple use of paved court areas and other facilities will result in worth-while economies.

(d) *Relationship of use areas and accessibility.*—Areas designed for use by the same age groups or having other functional relationship should be located adjacent to or at least near each other. Facilities for small children should be near the building and easily accessible without the need for passing through use-areas intended for older children. Facilities involving either large numbers of participants or spectators should be located where easily accessible from streets and parking area. A paved area near the building is usually desirable for use in inclement weather. Suitable walks separating the different uses and providing access between the different use areas and from the street are essential.

(e) *Safety.*—Suitable location and arrangement of use-areas, facilities, and apparatus on the playground and adequate separation of the different uses by walks, fences, and hedges will go a long way in promoting safety. Care in choosing the types of apparatus to be used is quite important, and types of equipment and apparatus that have proved unsatisfactory or contributed to accidents in other communities should be avoided.

(f) *Supervision.* — Properly trained supervisors are essential at every recreation area if its service to the public is to be satisfactory. A minimum of one man and one woman supervisor should be in attendance at every playground, playfield, and play-park at all times when they are open for public use. Some facilities require considerably more supervision than others. Proper planning will result in the grouping together of those facilities requiring maximum supervision, thereby reducing the number of supervisors needed.

A recreation unit can prove a success or a failure, depending upon the program offered and the type of supervision provided. Trained and enthusiastic supervisory personnel is available and should be used in all key positions.

(g) *Construction and Maintenance.*—Proper planning will result in economies in grading, drainage, and use of construction material, and also in maintenance costs. There is little use spending money to create facilities which cannot be properly and adequately maintained.

(h) *Uses to fit natural conditions.* — Grading should be kept to the minimum necessary for the creation of satisfactory use-areas. Reasonably level space should be chosen for game and court areas. These should usually slope from a minimum of ½% to a maximum of 2%. Steeper slopes might be used for an outdoor theater, winter sports, or a park area.

Worth-while natural features and as many as possible of the good existing trees should be preserved.

(i) *Facilities for public convenience.*—Parking areas, adequate walks, seating accommodations, drinking fountains, and toilet facilities are essential for the satisfactory use of all park and recreation areas.

(j) *Appearance.*—A well-designed park or recreation area which presents a pleasing appearance from both within and without will be an asset to any community or neighborhood. Without this quality, it can so easily become a liability and a nuisance. The proper choice, location, and planting of trees, shrubs, and vines, even on the smaller areas, should be a part of the initial development program. The use of perennials and annuals should generally be avoided.

The employment of a competent landscape architect, experienced in park and recreation planning and design, is necessary to achieve desirable results, and his services should be available before any site is chosen or acquired. Even if it is only possible to have the services of such a landscape architect on a part-time or consulting basis, it will be well worth while.*

17. Planning of Buildings

Proper planning of the indoor facilities is of the utmost importance in order to provide for the multiple use of available space, proper functional relation of the various uses to each other, ease of circulation through and between the different uses, good light and ventilation, and attractive architectural design. This can be accomplished only by the employment of a trained and capable architect experienced in this type of design.†

* If a landscape architect of adequate experience in this type of planning and design is not available in your community, it is suggested that a letter to the American Society of Landscape Architects, 9 Park St., Boston 8, Mass., stating your need, will bring you the names of several trained technicians in near-by localities.

† Similarly, a letter to your state chapter of the American Institute of Architects, or to their national headquarters at 1741 New York Ave., NW., Washington 6, D. C., will give you the names of qualified architects in your locality.

(For Selected Bibliography on Park, Recreation, and Athletic Facilities, see page 169.)

AUTHOR'S NOTE: The standards recommended in the foregoing article are in large part those recommended by the National Recreation Association and accepted by most planners and many municipalities. The section on "Planning Individual Areas" is based, in essence, on the *Recreation Manual*, Vol. 5, of the State of Pennsylvania Department of Commerce (1949), and *Planning for Recreation Areas and Facilities*, published in 1945 by the Federal Security Agency, but no longer available.

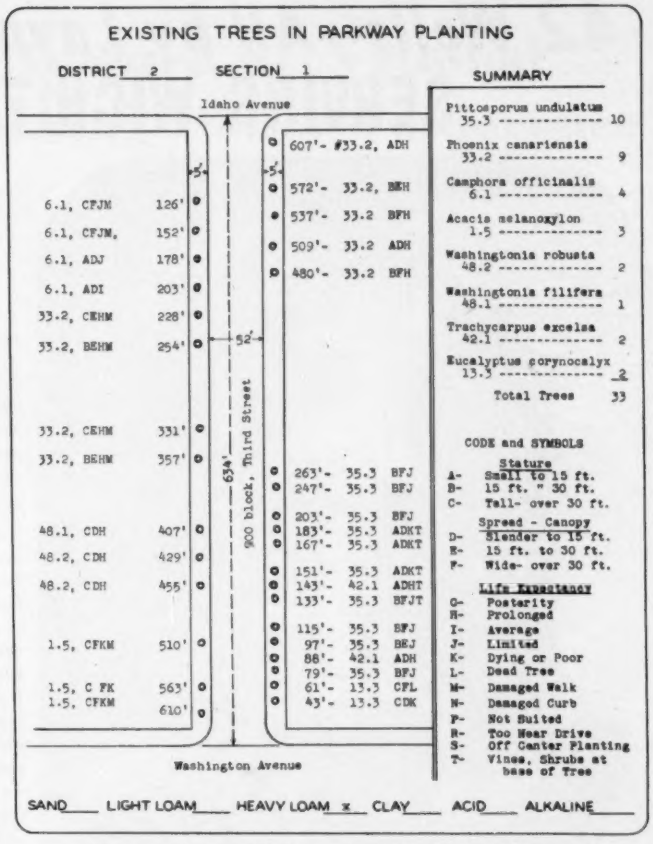
Santa Monica Surveys Its Trees

City takes "tree census" to guide in the care and future plantings; roller measuring device aids in completing this survey

By E. L. TROEGER
Park Superintendent
Santa Monica, Calif.

RECOGNIZING the importance of developing a "Master Street Tree Planting Plan" for the orderly planting of trees in the city, R. M. Dorton, City Manager, and M. M. King, Director of Public Works, recently instructed the writer to proceed with a survey of existing street-tree plantings. The survey showed the variety, size, condition, life expectancy, desirability, and distance apart of the trees and plantings.

The survey was conducted by a two-man crew who recorded the data on a sheet as shown in the accompanying illustration. Measurements were made down one side of a street and back on the other, by using a Rolatape No. 200. One man operates the Rolatape which indicates on a dial the accumulated distance to each tree from the end of the block. The second man is free to catalog all the required information as listed above. With a conventional steel tape a third man would be required, thus the Rolatape made it possible for us to save eight man-hours daily.


EXISTING TREES IN PARKWAY PLANTING

DISTRICT 2 SECTION 1

Idaho Avenue

6.1, CFJM 126'
6.1, CFJM, 152'
6.1, ADJ 178'
6.1, ADI 203'
33.2, CEHM 228'
33.2, BEHM 254'
33.2, CEHM 331'
33.2, BEHM 357'
48.1, CDH 407'
48.2, CDH 429'
48.2, CDH 455'
1.5, CFKM 510'
1.5, C FK 563'
1.5, CFKM 610'

5' 5' 52' 634' 900 block, Third Street

607'- #33.2, ADH
572'- 33.2, BEH
537'- 33.2 BFH
509'- 33.2 ADH
480'- 33.2 BFH
263'- 35.3 BFJ
247'- 35.3 BFJ
203'- 35.3 BFJ
183'- 35.3 ADKT
167'- 35.3 ADKT
151'- 35.3 ADKT
143'- 42.1 ADHT
133'- 35.3 BFJT
115'- 35.3 BFJ
97'- 35.3 BEJ
88'- 42.1 ADH
79'- 35.3 BFJ
61'- 13.3 CFL
43'- 13.3 CDK

Washington Avenue

SUMMARY

Pittosporum undulatum 35.3	10
Phoenix canariensis 33.2	9
Camphora officinalis 6.1	4
Acacia melanoxylon 1.5	3
Washingtonia robusta 48.2	2
Washingtonia filifera 48.1	1
Trachycarpus excelsa 42.1	2
Eucalyptus corynocalyx 13.3	2
Total Trees	33

CODE and SYMBOLS

Stature
A- Small to 15 ft.
B- 15 ft. " 30 ft.
C- Tall- over 30 ft.

Spread - Canopy
D- Slender to 15 ft.
E- 15 ft. to 30 ft.
F- Wide- over 30 ft.

Life Expectancy
G- Posterity
H- Prolonged
I- Average
J- Limited
K- Dying or Poor
L- Dead Tree
M- Damaged Walk
N- Damaged Curb
P- Not Suited
R- Too Near Drive
S- Off Center Planting
T- Vines, Shrubs at base of Tree

SAND___ LIGHT LOAM___ HEAVY LOAM x CLAY___ ACID___ ALKALINE___

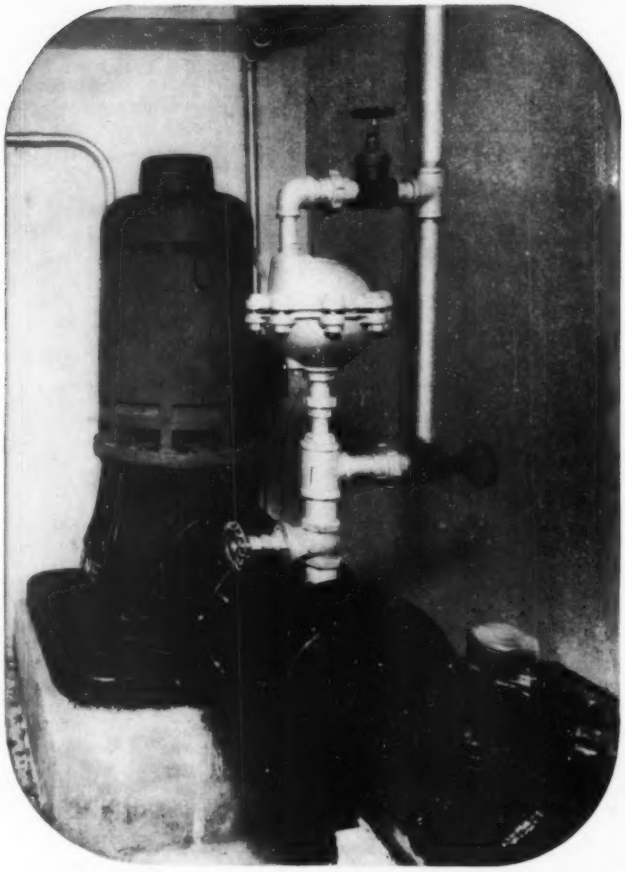
The survey is transcribed onto sheets like this for reference.

The information thus received was then transferred to a master map and the summaries to a master summary which enabled us to plan future work so that weak, undesirable trees can be removed and strong stock can be planted where needed.

We also have been able to use the same measuring equipment to locate damaged sidewalks, driveways, and curbing quickly and accurately, thus making it easy to prepare plans and quantities for repair crews, and generally expedite this maintenance work.

The Santa Monica survey crew gathers its records quickly with its automatic measuring device. Park Superintendent Edwin L. Troeger, left, reviews the survey while H. O. Strange, center, records the data and Maurice Eldridge, right, takes measurements.

42 Wells—All by Layne
SERVING WICHITA, KANSAS



THE NATION'S 2ND LARGEST MUNICIPAL USER OF GROUND WATER

In 1938, Layne installed twenty-five top performing well water units to give Wichita 48 million gallons of water daily,—enough so city officials estimated, for all needs until 1960. Then came World War II and Wichita gained many new industries and a big growth in population. The demand for water quickly became greater than the supply.

Surveys indicated that some thirty miles northwest of the city, The Equus beds offered a thousand square miles of water bearing formations. Again Layne was called in and was given a contract for seventeen new wells to be completed without delay. Layne crews swung into action. They drilled the wells, set casing, sand screen and pumps. Including testing time, a new well was completed every nine days until all seventeen were in service, increasing Wichita's total supply to 62½ million gallons per day,—more than enough for all domestic and industrial needs.

Whether for an emergency, or for normal needs, Layne is always in a position to do an outstanding job in the development of ground water for any purpose. For further information, catalogs etc., address

LAYNE & BOWLER, INC.
General Offices, Memphis 8, Tenn.

AT THE MIAMI AWWA CONVENTION SPACE 120-121

The Layne pumping equipment for Wichita has made an amazingly fine record of good service. In 9 years of heavy load service, the only repairs needed was a relatively small item—6 new air lines. Well No. 1 operated day and night with no shutdown for 121 days—producing over 180,000,000 gallons of water.

Layne
WELL WATER SYSTEMS
VERTICAL *Turbine* PUMPS

LAYNE ASSOCIATED COMPANIES

ASSOCIATED COMPANIES—Layne-Arkansas Co., Stuttgart, Ark. ★ Layne-Atlantic Co., Norfolk, Va. ★ Layne-Central Co., Memphis, Tenn. ★ Layne-Northern Co., Mishawaka, Ind. ★ Layne-Louisiana Co., Lake Charles, La. ★ Louisiana Well Co., Monroe, La. ★ Layne-New York Co., New York City ★ Layne-Northwest Co., Milwaukee, Wis. ★ Layne-Ohio Co., Columbus, Ohio ★ Layne-Pacific, Inc., Seattle, Wash. ★ The Layne-Texas Co., Ltd., Houston, Tex ★ Layne-Western Co., Kansas City, Mo. ★ Layne-Minnesota Co., Minneapolis, Minn. ★ International Water Corp., Pittsburgh, Pa. ★ International Water Supply, Ltd., London, Ont. ★ Layne-Hispano Americana, S.A., Mexico, D. F. ★ General Filter Company, Ames, Iowa.

Resolutions Adopted by National Housing Policy Conference

SPONSORED by Mayor Joseph M. Darst; Gale F. Johnston, president of the Mercantile Commerce Bank and Trust Company, and other prominent St. Louis business and civic leaders, a National Housing Policy Conference was held in St. Louis, March 19-20. In attendance were industrial, financial, labor, business, housing, religious, and civic leaders from 35 states, representing most of the principal communities in the United States. The meeting was called to recommend a housing policy in the light of our national defense economy.

Culminating the two days of discussion, the Conference adopted unanimously the following statement of policy and recommendations: *

Federal Legislation

1. We are in a war economy which seriously aggravates the housing situation. In order to meet defense housing needs we support the proposed Housing Act of 1951 as a means of sustaining the defense effort.

2. In addition, we affirm the objectives of the Housing Act of 1949—a decent home in a wholesome environment for every American family—as conducive to the defense effort. We call upon all groups in industry, finance, and business, no matter how divergent their points of view, to unite in efforts to reach the ultimate goal. A spirit of tolerance, understanding, and cooperation, especially in the light of international events, is fundamental.

Defense Housing

3. Defense housing is an integral part of national defense. Critical materials should be apportioned to it throughout the entire program. Private enterprise should be given the job of providing as much of defense-housing needs as possible. Where private enterprise cannot or will not provide housing within the means of defense workers, the balance of such housing should be provided by public financing. Credit and building material restrictions should be adjusted so as to facilitate construction of all defense housing. Unless appropriate steps are taken immediately, we will have temporary, unsalvageable housing, which is not desirable. All defense housing, whether built by private enterprise or public agencies, must be constructed so as to be a permanent asset in the community. Community facilities should be provided, simultaneously with housing, and with federal assistance where communities cannot provide them from their own resources.

Elimination of Blight

4. In view of the vulnerability of American cities, the elimination of substandard structures will greatly assist civil-defense authorities in their efforts to protect citizens. That is an additional reason why private enterprise and government must cooperate to eliminate blight and to redevelop our urban areas under the provisions of Title I of the Housing Act of 1949. This program must be completed as rapidly as possible consistent with the defense effort.

Business, industry, and commerce must also recognize that a blighted city is inefficient and costly and obstructive to the program of national defense. Communities which do not redevelop their blighted areas are bound to stagnate. We, therefore, urge business, industry, and commerce to take the lead in civic redevelopment as a part of the process of the regeneration of our nation. We believe it is not wise to slow down on the planning and financing of redevelopment. If areas cannot be physically cleared, every step short of demolition of habitable buildings should be taken, so that there will be no delay in bringing about the final phase of redevelopment.

Civilian Needs

5. Normal civilian needs for housing by private enterprise and for public housing in fair proportion should be provided to the greatest extent possible consistent with the defense efforts. Private enterprise should endeavor to meet the need for more rental housing, not only for defense workers but for normal civilian use. Both private and public housing must give special consideration to the needs of families with children, especially families requiring more than two bedrooms. Although the need for economy is fundamental, there must be sound standards for construction and adequate standards of livability.

Coordination and Centralization

6. A great many functions, such as the allocation of materials and financial aids for the construction of defense housing, require a high degree of coordination. For that reason, we favor the centralization of all activities affecting the defense-housing program under one administrative head, who will collaborate with other defense agencies. In addition, the expeditious handling of every phase of the housing programs for defense workers and normal civilian needs, and of the program for urban redevelopment, requires a high degree of courage and leadership.

Misleading Statements Deplored

7. We recognize the contributions made to the nation's housing by both private builders and public agencies. We deplore the intransigent attitude of adherents of both private enterprise and of public housing which fails to present a true picture of the value of each type of program and of the value of a combined program to the American public. There can be no excuse for distorted and misleading statements made and inspired by adherents of either private enterprise housing or public housing. Every effort must be made to prevent public confusion and misunderstanding caused by dubious tactics which seek to obstruct the construction of much-needed housing for families in all income groups throughout the nation.

Building Codes and Research

8. In order to achieve the maximum economy in the use of materials, we endorse all efforts to obtain modern building codes, and favor further federal aid for research and experiments aimed to improve technological operations of the building industry.

Citizens' Organizations Needed

9. The successful planning and operation of all housing programs, and the proper planning and consummation of urban-redevelopment programs, require the united support of leaders in the building industry, finance, and business, and of officials on every level of government. In addition, these programs especially require the support of citizens in each community. We urge the establishment of local, non-partisan, non-polical citizens' organizations to foster an understanding of how the needs of their communities may be met and of the truth about urban-redevelopment and private and public housing programs, in order that the goal of a decent home in a wholesome environment for every American family can be achieved.

* See also excerpts from address by Mayor David L. Lawrence, of Pittsburgh, Pa., page 145.

How to Get Steel for Maintenance and Repairs

use NPA Regulation No. 4

Municipalities, other government agencies, business enterprises and public or private institutions may now use a DO rating to obtain limited quantities of steel for maintenance, repairs and minor capital additions. The rating to apply is DO-97 as authorized by the NPA's new Regulation No. 4.

Obviously the use of this rating does not automatically get the steel because it is impossible to maintain complete stocks under present conditions. However, it does assure your order of preference over unrated orders and equal treatment with all other orders bearing a priority rating. If we have the steel you get it. Morever, we can in turn extend the rating which should help us to maintain stocks for your future needs.

Because of broken stocks, we suggest you give us alternate sizes, gauges and qualities that would be acceptable. In this way you increase the chances of getting steel you will be able to use.

And remember, if your order falls within the provisions of Regulation No. 4 take advantage of it—use your rating! You can be sure that we will make every effort to take care of you as promptly and fully as possible.

If you do not have this Regulation No. 4 we will be glad to send you a copy.

PARTIAL LIST OF PRODUCTS—BARS • STRUCTURALS • PLATES
SHEETS • TUBING—IN CARBON, ALLOY & STAINLESS QUALITIES

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STEEL-SERVICE PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • DETROIT • CINCINNATI • CLEVELAND
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We Do Not Want to Wait for Bombs to Clear Our City Slums

Excerpts from the speech delivered by Mayor David L. Lawrence, of Pittsburgh, Pa., before the National Housing Policy Conference, St. Louis, Mo., March 19, 1951.

IN MY JUDGMENT, it would be a national tragedy if any cause except the most stark and compelling problems of survival is allowed to halt the program contemplated in the National Housing Act of 1949.

I think there is a need for courage and for leadership in the local communities. Timid officials, who get political fainting fits at the first sign of opposition, are not going to clear many slums or build many houses.

I also want to say that there is a need for courage and leadership in the national administration of the public-housing program. What we may expect of our local officials, we may equally expect from those who administer the Act. The public-housing program can die as quickly from the over-timid, over-cautious, too-blank-technical ministrations of its guardians as it can from the fierce onslaughts of its admitted enemies.

This is particularly true, I think, in the element of costs.

Change in Dollar Value

We may as well recognize that the dollar values at the time of the passage of the Act are not the same as the dollar values of March 1951. No one can honestly criticize the Administrator if he recognizes this fact too, and uses the discretion Congress gave him to adjust the cost limits to what it actually takes to build housing in our cities—and this without undue delays and haggling and damaging cutbacks in the quality of construction.

The changing dollar value also calls upon us, I believe, to look again at the income ceilings we place upon the families who are eligible for public housing. It is proper to have a gap between the family which requires subsidized rental and the family which is able to buy its housing at the going rate. It is improper to make this gap so wide that the only persons eligible for public housing are those families who are relief cases. The low-income wage earner should not be excluded from our housing projects, especially at a time when his take-home pay buys less and less of the essentials of life

Here again, we should not compromise so much that we lose the purpose of public housing.

Any discussion of housing policy and our cities must also embrace the relationship between housing and urban redevelopment. Some persons have tried to draw a distinction between these activities. To them, urban redevelopment is fine and to be applauded; public housing is wrong and to be deplored.

I happen to be the chairman of the Redevelopment Authority in Pittsburgh, and our experience has taught me and my colleagues on the Authority that there is no separation possible between these programs. We have had success in developing two great redevelopment projects that are resulting in the investment of more than $100,000,000 of private funds in Pittsburgh's future. We like to say that in our city, you can go out and get mud on your shoes at a redevelopment construction site instead of ink on your fingers from a handsome redevelopment plan.

But we know that we are not going to have much more redevelopment unless we have expanded public housing, because public housing for low-income families is the pivot upon which all genuine slum clearance turns. You must relocate your families before you can clear an area. Without public housing, the relocation task is impossible except for a very few specialized areas. Even where there are only a relatively few families on the proposed redevelopment site, some of them will be hard-core cases which only public housing will shelter.

There is a point, of course, in our mobilization effort at which all construction may have to be scaled down. But if we are to find it necessary to have a truly Spartan civilian economy, then the sacrifice ought to be evenly spread among all of our people. Public housing, because it helps the most unfortunate among us, should certainly not be selected as the special sacrificial victim.

But in any event, there is no good cause to slow down on the planning and the financing of redevelopment. If areas cannot be physically cleared immediately, there is a great gain to be registered if they are purchased, stamped with their redevelopment use, and brought under public control against the day when they can be brought into the final phase of redevelopment.

We do not want to wait for bombs to clear our city slums.

We have all said that we want in our cities every kind of good housing—public and private, low-income, middle-income, and high-income.

None of us wants unbalanced communities, economic ghettos, or snug harbors for the ultra rich.

The healthy America community is one which is a cross-section of our country's life; its varied peoples; its diverse skills; its pounding energy.

We have that promise before us.

Let us all hope that we can achieve it.

Help Plant Your Community

THERE are six principal reasons for planting and beautifying your community:

1. To make it a better place in which to live
2. To attract more business from outlying areas and from tourists
3. To help in encouraging new industries to locate in the community
4. To increase property values
5. To further community loyalty and pride
6. To help "Plant America" for beauty and for conservation of resources

What Can Be Done

A list of projects for the community, to be taken up in the order they are needed, might include the following:

1. A community garden
2. Streets properly planted with shade trees
3. Landscaping and planting of public buildings—schools, airports, athletic fields, churches, courthouses, etc.
4. Beautifying highway entrances to the community. Encouraging owners to landscape and plant around tourist accommodations, gas stations, restaurants, and roadside signs
5. Develop a local park, or clean up and plant up existing parks and banks of local streams
6. Establish a community forest, possibly using tax-delinquent land
7. Encourage proper landscaping and planting of homes to filter dust and temper the climate
8. Sponsor 4-H or garden clubs for boys and girls of community. Have school planting drives by students. Contact county agent, or state extension service for details
9. Encourage planting of trees and shrubs on all bare and eroded land, both public and private, for soil and water conservation, income from lumber, preservation of wild life
10. Organize community planting program, concentrating on projects that are most needed and will be most spectacular. Mayor should issue a proclamation or statement on need to beautify the town

From *Plant America Means Community Betterment*, a leaflet published by the American Association of Nurserymen, 636 Southern Bldg., Washington 5, D. C.

EASY OPERATION, *reliable performance...* DUAL AUTOMATICS MEAN *all-around* SATISFACTION!

IN selecting parking meters, actual on-the-job behavior is the best measure of value we can suggest. Check with officials in any of the hundreds of Dual-equipped cities. You'll get a report of *all-around* satisfaction, because . . .

1. *Motorists like the positive-timing,* automatic *operation of Duals—no levers to fuss with. One-hand, coin-actuated operation is easy and* fast—*avoids wet fingers and soiled gloves in bad weather.*
2. *Experienced municipal and traffic officials favor Duals because maintenance* stays low, *while coin collection and other servicing is simple and speedy. Year-in, year-out economy means maximum return per meter.*

Get all the facts on Dual plus values. Free bulletins cover Dual Automatics for *on-street* as well as *off-street* parking. Send for either or both and ask about Dual's helpful survey service.

THE DUAL PARKING METER COMPANY
A subsidiary of The Union Metal Manufacturing Company
Canton 2, Ohio

...YOUR BEST ANSWER TO EVERY PARKING PROBLEM

Municipal News Brevities

Building Code for One- and Two-Family Dwellings

The New York State Building Code Commission on February 19 began distribution of copies of its proposed one- and two-family dwellings' code, and a 283-page illustrated manual indicating acceptable construction methods and test procedures for alternate methods under the code. Distribution covered 1,567 municipalities of the state, and more than a thousand other groups. Copies were also sent to top officials in 36 other states concerned with building laws on a state-wide basis. More than 72 municipalities were represented at a conference called by the Commission for the purpose of discussing the dwellings code and manual on February 21. After comments and criticism on the proposed code have been received and reviewed, further revisions will be made on the code and manual draft. The Commission's office is at 1740 Broadway, New York 19, N. Y.

Brightening Town Reports

South Kingstown, R. I., is taking advantage of several available methods for obtaining illustrations at little or no cost to use in its annual report. Council President Charles H. Bechtold has appointed a three-man committee to organize and judge an amateur photography contest; the winning prints will appear in this year's report. Last year's report featured a front-cover sketch drawn by a high-school student.

Montclair Progress Report

A clue to how a high degree of civic interest is maintained in Montclair, N. J., is furnished by a printed postcard from Margery Quigley, Librarian of the Public Library. The card reports that a pictorial presentation of Montclair's recent civic progress, including new store fronts and off-street parking, is being displayed at the Montclair Trust Company, together with a special showing at the Trust Company of books and reports on architecture, city planning, municipal management, and related subjects from the Montclair Library.

Newark City Hall Labeled

Can strangers readily identify the city hall in your city? Mayor Villani of Newark, N. J., decided that there would be no further confusion caused by the unmarked city-hall building there. In February, bronze letters 28 inches high were placed over the main entrance.

New Civic Center For Prescott, Ariz.

As reported by the United States Chamber of Commerce *Newsletter*, the citizens of Prescott, Ariz. (1950 population, 6,018), thought enough of their town to work for its needs, and today the community has a new civic center. A neighborhood man who owned a piece of property thought it would do for a three-fold community project: a building in which would be housed a tourist reception center, a playground, and a meeting place available to civic groups free of charge. The idea was presented to the Prescott Chamber of Commerce, whose president designated a workday at which more than 50 residents and businessmen showed up. Thanks to the civic-minded donations of time, money, and materials, the Fagerberg Civic Center is now in operation.

Preserving National Security

City officials who have been worried about the extent of their responsibilities for concealing information about vital municipal utility extensions to new defense plants, airport-planning programs, new camps for the armed forces, and other technical data of possible value to a potential enemy may now secure guidance from a new federal office. An office of Technical Services has been established in the Department of Commerce (Washington 25, D. C.) to advise as to whether specific technical data should be disclosed, withheld, or given limited distribution. Requests for opinions on the importance of release of information concerning national security should be directed to this office.

Detroit Determined To Fix City Streets

Detroit is taking no chances on future shortages of manpower and material. On February 28, the Common Council approved an advance of $1,800,000 from the new budget of July 1 to speed repairing of the city's streets, on a recommendation by DPW Superintendent Glenn C. Richards, approved by Mayor Cobo. With the advance, the city will have $2,300,000 to resurface and repair 40 major streets to a length of about 80 miles.

Burbank and Denver Get New City Codes

Rivaling a Congresional filibuster in length of session, the Burbank, Calif., City Council recently held a nine-and-a-half-hour meeting, and no important policy questions were discussed.

The city's 1,100 statutes have been codified into a single, loose-leaf type of book, with 381 pages, and 200,000 words. City Clerk Addie Jones and Deputy Clerks Naomi Putnam and Irene Adams took turns in reading the code before the council, as a prerequisite to its formal adoption, making the council meeting the longest in the history of the city since its incorporation in July 1911.

In Denver, every department and division head devoted hours to recommending redrafting of ordinances affecting his department in order to modernize the municipal code. Preparation of the new comprehensive 653-page book began four years ago, and every effort was made to bring the laws up to date, clarify them, and remove ambiguities before publication. Other sections of the city code — plumbing, building, and electrical—have been separately published as loose-leaf handbooks for use by contractors and others affected by the ordinances.

Making the Punishment Fit the Crime?

Though autos aren't so numerous in Great Britain as in the United States, evidently parking problems are becoming serious there, too. And drastic remedies are being proposed. For example, the city council of Spalding, England, recently decreed that if Spalding motorists don't pay their 35-cent municipal-parking-lot charges, a policeman will deflate their tires. This may be taking the joy out of life for British auto drivers, but Spalding policemen, bothered by parking woes, may find their morale inflated by the new ease with which the law can be enforced.

City-County Assessment Showdown

A common, but not often-discussed problem concerning city-suburb relationship is that of assessment values as compared with true values for real estate taxation. The case of Newark, N. J., and Essex County, is a case in point. Newark contends that Essex suburbs are assessing properties at from 28% to 47% of the selling price, while Newark's assessments average 68%.

Obviously such a situation—low suburban assessments—force Newark and other large cities to pay a disproportionately large share of county expenses, and also give to the suburbs an unfair—and illegal—advantage in competing for new industries, comments the *Newark Evening News*. Undervaluation of ratables also brings many municipalities, at least in New Jersey, an unfair share of state school funds.

In Newark's case, protests will be made to state authorities. The law requires New Jersey real estate to be assessed at its "full and fair value," which is defined as the price "it would sell for at a fair and bona fide sale by private contract." But, if, as seems likely, Newark will get nowhere by such a protest, an appeal to the courts seems necessary. Large cities must force showdowns on situations of this character.

Periodic Health Check-ups

As a means of increasing efficiency and raising general health standards, a number of cities have been instituting regular physical check-ups of some, or all, of their employees.

Begun in San Diego, Calif., some years ago, the practice has spread throughout the country. San Diego requires a regular check-up every year for firemen and policemen, and every three years for all other employees. Another California city, San Jose, has instituted examinations for all city employees under 45 years of age every three years, and every year for those over 45. Results establish fitness for work in various occupations.

Cincinnati provides physical examinations for employees whose efficiency seems low or who have been absent from work a long time. Louisville provides for annual physicals for all police and firemen. Indian Hill, Ohio, has just put in periodic examinations for policemen only.

Civil Defense "Paper" Funds Criticized

Arthur W. Wallander, Director of the New York City Office of Civil Defense, and Robert Moses, City Construction Coordinator and Coordinator of Construction and Planning for Civil Defense, both expressed criticism of State and Federal civil-defense planning on March 20.

Coordinator Moses stated that the Federal Civil Defense bill is so poorly drawn that it must be clarified and, above all, must be supplemented by actual appropriations. He also pointed out that the New York State legislature at its last session, voted a completely inadequate appropriation, and called for the city to pay half of all civil-defense expenditures.

Relief of traffic congestion, which might otherwise strangle civil-defense rescue work, should receive top attention, he said, naming arterial highways and the construction of off-street parking facilities partially financed by parking-meter revenues as particularly important.

He said that the construction of hospital wings, health centers, and police and fire stations are needed as much as shelters in any long-range civil-defense construction program.

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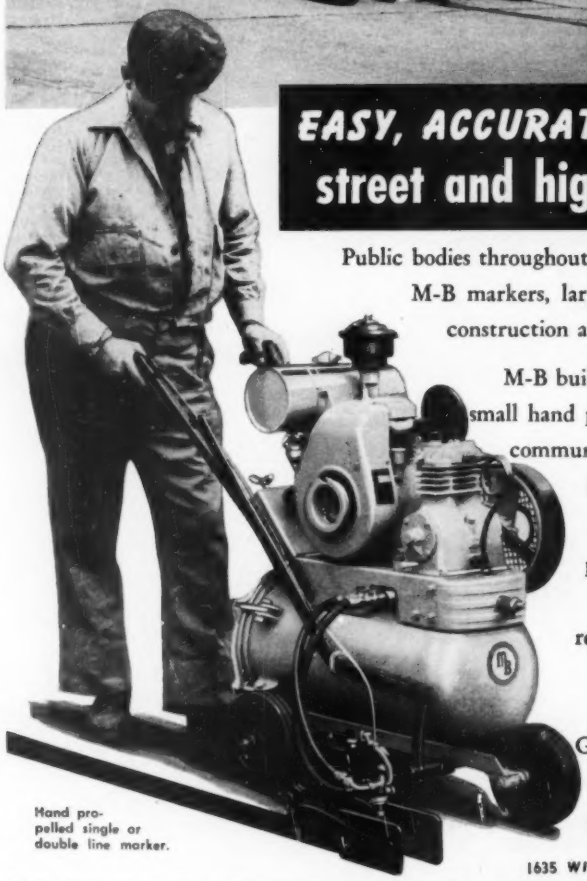

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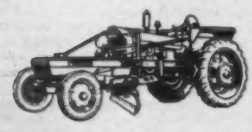

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Zoning and Planning Notes

Edited by NORMAN WILLIAMS, JR.

Exclusion of Schools From Village Invalid

NEW YORK. *Union Free School District No. 14 of Town of Hempstead* v. *Village of Hewlett Bay Park*, 102 New York Supplement 81 (Supreme [lower] Court, December 15, 1950).

In this case a school district contracted to buy a tract of land in one of its several municipalities for a school, after approval by the qualified voters of the district. Since the local village zoning ordinance did not permit a school anywhere in the village, the school district brought an action for a declaratory judgment on its right to establish a school at that location.

The Court held first that the school district, as a prospective vendee under a contract to purchase land, had the right to bring the action. Moreover, since the school district was authorized by state law to establish a school and to provide public education, the Court held that the village could not use its zoning powers to obstruct the district in the performance of its official duties. In so holding, the Court quoted language from *Concordia Collegiate Institute* v. *Miller*, 301 New York 189, 195-196, to the effect that educational institutions are not offensive but are in furtherance of public health, safety, morals, and welfare.

Unless reversed, this case throws serious doubt on the power of any municipality in New York State to exclude schools from any district. However, it is not clear to what extent the case turns upon the fact that a small village was attempting to exclude a school built by a larger school district.

Considerable public support often exists for a purely residential district not permitting any community facilities. However, contemporary planning-thinking is tending to emphasize the desirability of integrated neighborhoods, each with its own community facilities.

Self-Service Filling Stations Prohibited

NEW JERSEY. *Reingold* v. *Harper*, 78 Atlantic (2d) 54 (Supreme Court, January 8, 1951).

In this case a recent New Jersey statute prohibiting self-service filling stations of all kinds was upheld, by a divided vote of 5 to 2. Essentially the Court split on the perennial question of the relative roles of Legislature and Court, and in particular on the extent to which a Court would look into the motives behind the passage of legislation.

The opinion noted that self-service filling stations are widespread in California, and are growing in other states. Such establishments are of three kinds. The first, operated by coin machines with no attendants, obviously involves some dangers; in the second type, attendants are present but do not supervise sales; and in the third type attendants are available to supervise all sales. No statistics were presented as to actual accidents in such establishments, but both opinions discussed the safety question at length.

The case involved a filling station in Hackensack, operated with attendants at each two pumps, and in accordance with the regulations of the local fire department. Even with the attendants, gasoline was sold at 4 cents a gallon less than the traditional filling station.

The majority opinion emphasized the arguments previously made by representatives of the traditional filling stations at the legislative hearings. First, obviously there is danger if anyone smokes while a pump is in use. Second, gasoline flowing through the pipes may generate static electricity, and the nozzle of the hose should be held in contact with the metal of the gasoline tank on the car. The opinion also contains a long and rather naive discussion of the police power and constitutional limitations.

The minority argued that the statute represented a use of state power to put one economic group out of business for the benefit of another group, by forbidding a more efficient mode of distribution. The opinion emphasized the savings in distribution costs to the public, and the lack of accidents even with the admittedly more dangerous coin-operated machines.

Truck Unloading Forbidden Near Fire Stations

WASHINGTON. *Sandona* v. *City of Cle Elum*, 226 Pacific (2d) 889 (Supreme Court, January 12, 1951).

In 1949 the City of Cle Elum forbade any vehicle to "stop, stand or park" anywhere within 75 feet from the entrance of a fire station. An existing truck terminal was located across the street and in the same block as the fire station. The actual loading platform was located 97 feet from the entrance of the fire station, but, when the larger trucks were backed into loading berths, they sometimes protruded beyond the center line of the street, well within the 75-foot zone. The owners of the truck terminal brought an action to enjoin enforcement of the ordinance, arguing that there was no way to alter their building, and that enforcement of the ordinance would put them out of business.

The Court held that the language of the ordinance—to "stop, stand or park"—included truck loading and unloading. Since the ordinance was designed to protect the city in carrying out one of its most important municipal functions, that of fire fighting, the ordinance was upheld.

Various Non-Residential Structures Not Permitted In Residence Districts

PENNSYLVANIA. *Appeal of Mutual Supply Company*, 77 Atlantic (2d) 612 (Supreme Court, January 2, 1951).

PENNSYLVANIA. *Appeal of Lord*, 77 Atlantic (2d) 728 (Superior Court, January 12, 1951).

MARYLAND. *Gleason* v. *Keswick Improvement Association*, 78 Atlantic (2d) 164 (Court of Appeals, January 10, 1951).

In the *Mutual* case, in order to facilitate mining coal from the remaining 161 acres of a large tract of coal land, a coal company applied for a variance to permit the establishment of a tipple at a location recently re-zoned to a one-family residence zone, and surrounded with fairly expensive residences. The Court held that several other ways were available to get the coal out of the ground, and refused to grant a variance simply because the proposed coal tipple would provide a more convenient and economical way to bring coal out.

The Court also held that it was proper for a township to forbid all industrial uses, including a coal tipple, within its jurisdiction. In this connection the Court cited the famous case of Duffcon Concrete Products v. Borough of Cresskill, 1 New Jersey 509.

In the *Lord* case, a licensed amateur radio operator used antennae on his residence to send messages as far as the Pacific Coast, and to receive messages from all over the world. He applied for a permit to erect a metal radio tower 32 feet high in his rear yard, in order to enable him to send messages all over the world.

The Court held that such a tower was not permitted as an "accessory use on the same lot with and customarily incidental to any of the above permitted uses and not seriously detrimental to a residence neighborhood." The Court noted that the improvement of inside aerials has made outside aerials frequently unnecessary, and emphasized the provision in the enabling act referring to the character of the district and the protection of the value of buildings.

The Maryland case involved a tract of land located within a residence zone, but 5 feet from the boundary of a commercial zone. In accordance with the Baltimore zoning ordinance, a purchaser of the property applied for a special acceptance to permit a store on the lot; but the Court held that such a permit could not be granted to anyone who purchased property with notice of a restriction. The Court treated the case as one involving a variance for hardship, to be granted only on a showing of special circumstances not existing with respect to adjacent lots.

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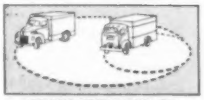

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Legal Notes and Decisions

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS
Charles S. Rhyne, General Counsel

Admissions Tax—Construction of State Statute

In action by city against Department of Revenue for State of Kentucky for judgment declaring rights of parties in regard to admission tax on fees charged for admission to municipal field house and swimming pool, held that fees charged for public entertainment such as professional basketball games, wrestling matches, and musical productions were not exempt from state admissions tax, as distinguished from fees charged purely for recreational purposes which are exempt, such as amateur basketball games or admission to municipal swimming pool. *City of Owensboro* v. *Dept. of Revenue of Kentucky*, 234 S. W. (2d) 664 (Ky. App., Nov. 28, 1950).

Airports—Lease of Parking Areas For Limousine Stands Upheld

In habeas corpus proceedings against Oklahoma City Chief of Police, petitioner sought release from jail for his alleged violation of city ordinance on ground of invalidity of such ordinance designating parking areas at municipal airport as limousine stands for exclusive use by airline limousines under contract between city and third person for transportation of airline passengers, held ordinance valid and not improper exercise of police power and petitioner's release was denied. *Ex Parte Houston*, 224 Pac. (2d) 281 (Okla. Crim. App., Nov. 22, 1950). *Reh. den.* Nov. 22, 1950.

City Officers—Increase in Salary During Tenure of Office

In action by city against defendant justice of peace who was also police judge to recover salary payments made to him in excess of his salary as police judge, held that defendant was "public officer" whose compensation could not be increased during term of office. *City of Everett* v. *Johnson*, 224 (2d) 617 (Wash., Nov. 30, 1950).

Drainage System—Diversion of Surface Water—Liability of City

In action to enjoin municipalities from diverting water from drainage system to property of plaintiffs, held defendant not liable unless plaintiffs prove that by deliberate act of wrongdoing, municipality entered upon drainage scheme which resulted in water collecting on plaintiff's property. *Reid Development Corp.* v. *Mayor & Council of Borough of Verona*, 76 Atl. (2d) 821 (N. J. Super., Nov. 21, 1950).

Fire Protection—Property Located Outside City Limits

Where action brought against city to enjoin officers of defendant city from furnishing fire protection to property located outside city limits, held city officers, in their discretion, may authorize use of city's fire equipment and firemen for purpose of extinguishing fires in territory and districts beyond corporate limits of city. *City of Pueblo* v. *Flanders*, 225 Pac. (2d) 832 (Colo., Oct. 30, 1950).

Laundries—Liability for Operating Without City License

In appeal from conviction in Municipal Court for operating laundry without license, held that where defendant lived in apartment building and operated laundry with 16 automatic washing machines and two driers and accepted laundry from both tenants in apartment house and persons living outside building, such operation was not domestic laundry work by person in tenement house not requiring license for such work. *City of Chicago* v. *Jones*, 95 N. E. (2d) 535 (Ill. App., Dec. 4, 1950).

License Tax—Not Valid on Goods Sold When Orders Taken in Another City

In action against city to recover privilege tax paid under protest, held that where plaintiff had no office or place of business in city, from which it sold goods wholesale or retail, and sale was made in City of Nashville, where orders accepted, plaintiff was not exercising privilege which was taxable by defendant city. *Neuhoff Packing Co.* v. *City of Chattanooga*, 234 S. W. (2d) 824 (Tenn., Dec. 9, 1950).

License Tax—Business Within City Limits—Distinguished from Business Within Police Jurisdiction

In proceeding to determine validity of ordinance of city imposing license or privilege tax on complainant, held that ordinance imposing license tax on bus company, in sum equal to 2% of gross revenue derived from preceding year's operations within city and police jurisdiction of city, was invalid so far as it imposed tax derived by company's operations within police jurisdiction of city, but tax of 2% on business done within city limits was valid. *City of Montgomery* v. *Montgomery City Lines*, 49 So. (2d) 199 Ala., Dec. 8, 1949). *Reh. Gran.*, June 30, 1950. *Reh. den.* Dec. 14, 1950.

Parking Garages—Eminent Domain—Right of City to Lease Condemned Land to Private Interests

In action seeking to restrain municipality from performing contract made with insurance company for lease of land to be acquired by condemnation of city for purpose of erecting parking garages, and defendant city moved to have complaint dismissed, held complaint stated a cause of action for contesting legality of contract between city and insurance company relating to condemnation of realty in question. *Denihan Enterprises* v. *O'Dwyer, Mayor et al.*, 100 N. Y. S. (2d) 512 (N. Y. App. Div., Nov. 14, 1950).

Policemen—Mandamus to Compel City To Reinstate Petitioner As Police Chief

In mandamus proceeding to compel reinstatement as police chief, held on appeal from trial court that ruling whereby petitioner could only be reinstated as member of force by Civil Service Commission was improper. *McGuckin* v. *Borough of West Homestead*, 76 Atl. (2d) 392 (Pa. Nov. 13, 1950).

Public Officers—Proceeding to Compel Reinstatement—Illegal Ordinance Creating Office

In proceeding by plaintiff for order directing his reinstatement as secretary of Director of Public Safety, held ordinance creating such position within city civil service was illegal when position had not previously been created either by ordinance or resolution and plaintiff not entitled to order. *Weaver* v. *North Bergen Township*, 76 Atl. (2d) 701 (N. J. Super., Nov. 14, 1950).

Public Parks—Ordinance Prohibiting Speech on Political and Religious Subjects—Invalid

In appeal from conviction for violation of ordinance which purported not to regulate but to prohibit speech in public parks on political as well as religious subjects, held that such ordinance was void and in conflict with both state and federal constitutions. *Milwaukee Co.* v. *Carter*, 45 N. W. (2d) 90 (Wis., Dec. 5, 1950).

Sewage—Charge upon Users for Improvements—Not Invalid

In action challenging validity of ordinance imposing charge upon users of sanitary sewer system for purpose of preliminary engineering services in furthering sewage-disposal plan, held that such ordinance was valid as health measure, even though few bore burden of charges. *Buchanan* v. *City of Miami*, 49 So. (2d) 336 (Fla., Dec. 12, 1950).

Slum Clearance—Eminent Domain—Absence of Authority to Undertake Projects

Where plaintiff property owners in alleged slum area brought action to determine validity of slum-clearance plan and urban redevelopment in city whereby city and housing authority would purchase or condemn areas of land determined by Authority to be slum areas, redevelop such areas by installation of sewers, streets, gutters, etc., and sell or lease lands to private persons or corporations, held that such plan was not authorized by Housing Authority Law. *McCord* v. *Housing Authority of City of Dallas*, 234 S. W. (2d) 108 (Tex. Civ. App., Oct. 20, 1950). *Reh. den.* Nov. 10, 1950.

Street Railroads—Order of Public Service Commission for Extension—Upheld

In proceeding by city transit company against state public-service commission for review of determination and order requiring company to extend its omnibus service from certain terminus, held that where street-railway corporation was obligated to serve certain area there was no constitutional restriction against state public-service commission's order for extension of such service. *Utica Transit Co.* v. *Feinberg*, 100 N. Y. S. (2d) 916 (N. Y. App. Div., Nov. 15, 1950).

Tax Exemptions—Charitable Association—Necessity of Occupying Property

Where association owned building and rented rooms to 13 charitable lodges, held association was not entitled to tax exemption on property because it failed to occupy property as required by statute. *Worcester Masonic Charity & Education Association* v. *Assessors of Worcester*, 94 N. E. (2d) 763 (Mass., Nov. 3, 1950).

Tourist Courts—Register of Guests For Inspection by City Authorities—Not Invalid

In action to enjoin enforcement of ordinance in city requiring managers of tourist courts to make entry on their register of all guests showing license number, type of automobile, date of arrival, and number of room or quarters rented to guest, held such ordinance not unreasonable and arbitrary exercise of police power. *Allinder* v. *City of Homewood*, 49 So. (2d) 108 (Ala., Oct. 26, 1950). *Reh. den.* Dec. 7, 1950.

Trailer Camps—Ordinance Requiring Filing of Land Plan of Proposed Camp Upheld

In proceeding against defendant borough to compel issuance of permit for operation of trailer camp within borough, held that where plaintiff relies upon ordinance for right asserted and duty asked to be enforced, he must comply with provision of ordinance requiring applicant to file plan of proposed camp before such permit could be issued. *Cloverleaf Trailer Sales Co.* v. *Borough of Pleasant Hills, Allegheny Co.*, 76 Atl. (2d) 872 (Pa., Nov. 13, 1950). *Reh. den.* Dec. 16, 1950.

The Municipal Bond Market

Some City Credit-Rating Myths Exploded

—*Level of Municipal Services is an Underrated Factor*

By CATHERINE CLARK
Municipal Service Department
Dun and Bradstreet, Inc.
New York, N. Y.

THERE are many people who ought to know better who look at a city's credit rating almost solely in terms of debt and taxes. Per capita debt, ratio of debt to taxable valuation, ratio of collections to the property-tax levy—these are the main items in such a picture, and all else is background. Debt reduction of itself is considered good, and issuance of a large amount of general obligation bonds at one time—that is, large in relation to the city's taxable valuation or its previous debt—is bad. Somehow, the issuance of revenue bonds escapes that censure, no matter how large a service charge must be imposed to pay them.

No one would quarrel with the proposition that, all other things being equal, a city whose debt is low on a per capita basis and in relation to taxable values is a better credit risk than one whose debt is high by these indexes. But the question may be raised whether some of the factors which are ordinarily overlooked are not of equal importance. No municipal administrator looks at city finance in such simple terms; should a bond buyer? Is debt merely a matter of size, or has it other aspects equally worthy of consideration?

For example, should the purpose for which bonds are issued be considered? A bond issue to finance capital improvements raises the net debt, a refunding issue does not. A bond issue to fund operating deficits or pay current expenses may be of the same amount as an improvement issue. No bonds at all mean a reduction in the debt. Do we set up a hierarchy of values here—capital improvement and funding issues equally bad, refunding issues better, no bonds at all best? Stated in those terms, the proposition is obviously absurd; yet it is on this unstated proposition that appraisal of a city's credit is often based.

No bonds at all may be best—*if* a city is financing its capital improvements adequately on a pay-as-you-go basis. If needed improvements are being neglected, no bonds at all may be a most unwise policy. Is there any city or school district in the country which now regrets that it issued bonds in the late 1930's to take advantage of a PWA grant? There are probably many, forced to finance at today's high construction costs improvements which can no longer be deferred, that regret they did not issue bonds then.

There are cases where funding or refunding bonds are necessary to set a city's financial house in order; or the refunding of callable bonds may result in a real saving in interest charges. For the most part, though, interest charges on funding or refunding bonds are just so much money down the drain. Interest charges on bonds issued to finance needed and carefully planned improvements cannot be considered in the same category. Which is better, to provide adequate school facilities when they are needed, or to make a record of debt reduction at the expense of years of overcrowding and half-day sessions? The fact that a municipality comes to grips with its capital improvement problems is a mark of good administration; it should also be a favorable factor in credit analysis.

Maturity Scheduling

Another important aspect of debt policy is maturity scheduling. While a price distinction is made between individual bonds of different maturity, the composite maturity schedule of a city's bonds seems to have little effect on its credit rating. It does not require a high degree of financial insight to see that this factor is worth more attention. There is no hard-and-fast rule which is applicable to all cases, beyond the one that bonds should always mature well within the life of the improvement to be financed. The serial annuity method of debt amortization is entirely justified for, say, a small school district which with one bond issue is taking care of its capital-improvement needs for many years to come.

Even a gradually rising trend of annual debt service may be justified when a comprehensive improvement program is being financed by a rapidly growing municipality. In this situation, however, a city might do well to provide a degree of flexibility by making a portion of the bonds callable before maturity. In the great majority of cases, where growth may be expected to be gradual and improvement needs continuing, a declining trend of annual-debt service requirements should be regarded as a desirable factor. The current bond issue is rarely the last.

Form of Debt Important

Another aspect of debt that may bear examination is its form. There is a tendency in some quarters to regard only general obligation bonds as debt. Revenue or special-assessment bonds, no matter how large the amount outstanding, are ignored. There are, in many cases, good reasons for issuing bonds payable solely from revenues rather than general-obligation bonds. There are also good reasons for classifying a city's debt by method of support and for weighing the debt burden on the property tax. But it is foolish to suppose that sewage-disposal bonds are a debt in one city, because they are supported from property taxes, and not in another, because they are paid from a service charge imposed when the bonds were issued. Other things being equal, the credit standing of both cities should be the same.

Municipal-credit analysis should not be a Procrustean bed which disregards the size and shape of a city's problems. The primary function of municipal government is service, and one of the objects of sound credit analysis should be to discover how efficiently and economically a city is performing that function.

Recent City Manager Appointments

ROBERT O. BAILEY, formerly manager of Guthrie, Okla., has accepted the managership of Chico, Calif., to replace Roy Huhs. Guthrie has appointed JAMES W. FLINT as its new manager. Mr. Flint has returned to the manager field after retiring several months ago from Ada, Okla.

JOSEPH FOGARTY has left Newburgh, N. Y., and FRED D. BAYNE has replaced him.

Sheboygan, Mich., has appointed its first manager. He is DONALD L. BROWN, formerly manager of Wakefield, Mich.

ROBERT L. BRUNTON, assistant manager of Minot, N. D., has accepted the appointment as manager of Milton-Freewater, Ore. He replaced GERARD S. VERGEER, who moved to Baker, Ore., in February to become its first manager.

F. N. JACKSON, an engineer, has accepted the appointment as manager of Rogers City, Mich. He takes the place of HOWARD GOHLKE, who moved to Harbor Springs recently.

The acting manager of Winter Park, Fla., since DONALD D. RIDDLE left, has been appointed permanent manager. He is A. R. MILLER, JR.

Fremont, Mich., has just appointed its first city manager under a revised ordinance. He is EUGENE G. MOODY, formerly assistant manager of Jackson, Mich.

A. J. O'ROURKE has replaced JAMES A. DANFORTH as manager of DeSoto, Mo.

COL. IRA A. RADER, retired, became manager of Shelbyville, Tenn., in February. He filled the vacancy left by S. G. BACKMAN.

JOHN W. PERRYMAN, JR., was recalled to active military service in February. R. B. RIDDLE, city engineer of Frederick, Okla.,

(*Continued on page* 171)

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Conventions — When and Where

Conventions listed this month for the first time are indicated by an asterisk (*).

***April 3-5—Columbus, Ohio**
HIGHWAY ENGINEERING CONFERENCE. Sponsored jointly by the Ohio Department of Civil Engineering, Ohio State University, and the Ohio Dept. of Highways. Annual Conference (Ohio State University). Chief Engineer, K. L. Rothermund, Dept. of Highways, Columbus 15, Ohio.

April 4-6—Chicago, Ill.
MIDWEST POWER CONFERENCE. Annual Conference (Sherman Hotel). Sec., Edwin R. Whitehead, Illinois Institute of Technology, Chicago 16, Ill.

April 5-6—Albany, N. Y.
AMERICAN WATER WORKS ASSOCIATION—New York Section. Annual Meeting (Hotel Ten Eyck). Sec., R. K. Blanchard, Neptune Meter Co., 50 W. 50th St., New York 20, N. Y.

April 9-11—Hot Springs, Ark.
ARKANSAS WATER AND SEWAGE CONFERENCE. Annual Convention (Hot Spring National Park). Sec., Harrison Hale, College of Engineering, 114 Chemistry Bldg., University of Arkansas, Fayetteville, Ark.

April 11-13—Hays, Kans.
AMERICAN WATER WORKS ASSOCIATION—Kansas Section. Annual Meeting (Hotel Lamer). Sec.-Treas., Harry W. Badley, 640 Highland, Salina, Kans.

April 11-13—Hays, Kans.
KANSAS SEWAGE WORKS ASSOCIATION. Annual Meeting (Hotel Lamer). Exec. Sec., Dwight Metzler, Kansas State Board of Health, Marvin Hall, University of Kansas, Lawrence, Kans.

April 11-15—Miami, Fla.
AMERICAN PLANNING AND CIVIC ASSOCIATION. Annual Convention (Hotel McAllister). Exec. Sec., Harlean James, 901 Union Trust Bldg., Washington 5, D. C.

April 15-18—Miami Beach, Fla.
ASSOCIATION OF STATE PLANNING AND DEVELOPMENT AGENCIES. Annual Meeting (Hotel Sherry-Frontenac). Exec. Dir., Walter H. Blucher, 1313 E. 60th St., Chicago 37, Ill.

April 19—Helena, Mont.
MONTANA SEWAGE WORKS ASSOCIATION. Annual Meeting (Placer Hotel). Sec., H. B. Foote, State Board of Health, Helena, Mont.

April 19-20—Lincoln, Nebr.
AMERICAN WATER WORKS ASSOCIATION—Nebraska Section. Annual Meeting (Cornhusker Hotel). Sec., E. Bruce Meier, 201 Mechanic Arts, University of Nebraska, Lincoln, Nebr.

April 20-21—Helena, Mont.
AMERICAN WATER WORKS ASSOCIATION—Montana Section. Annual Meeting (Hotel Placer). Exec. Sec., A. W. Clarkson, Montana State Board of Health, Helena, Mont.

April 23-28—Dallas, Texas
MUNICIPAL FINANCE OFFICERS ASSOCIATION OF THE UNITED STATES AND CANADA. Annual Meeting (Hotel Baker). Exec. Dir., Joseph F. Clark, 1313 E. 60th St., Chicago 37, Ill.

April 29-May 4—Miami, Fla.
AMERICAN WATER WORKS ASSOCIATION. Annual Convention (Dinner Key and Municipal Auditorium). Exec. Sec., Harry E. Jordan, 521 Fifth Ave., New York 17, N. Y.

April 30-May 1—Shreveport, La.
LOUISIANA MUNICIPAL ASSOCIATION. Annual Convention (Washington-Youree Hotel). Sec.-Treas., Mrs. Henry Jastremski, City Hall, Baton Rouge 1, La.

April 30-May 2—Washington, D. C.
CHAMBER OF COMMERCE OF THE UNITED STATES. Annual Meeting. Sec., Ralph Bradford, 1615 H St., NW., Washington, D. C.

May 7-9—Chattanooga, Tenn.
AMERICAN PUBLIC POWER ASSOCIATION. Annual Convention (Read House). Gen. Mgr., Carlton L. Nau, 1757 K St., NW., Washington, 6, D. C.

May 7-11—Detroit, Mich.
NATIONAL FIRE PROTECTION ASSOCIATION. Annual Convention (Hotel Statler). Gen. Mgr., Percy Bugbee, 60 Batterymarch St., Boston 10, Mass.

May 8-11—Chicago, Ill.
AMERICAN INSTITUTE OF ARCHITECTS. Annual Convention (Hotel Edgewater Beach). Exec. Dir., Edmund R. Purves, 1741 New York Ave., NW., Washington 6, D. C.

May 13-18—Atlantic City, N. J.
NATIONAL CONFERENCE OF SOCIAL WORK. Annual Meeting (Hotel Traymore). Exec. Sec., Joe R. Hoffer, 22 W. Gay St., Columbus 15, Ohio.

May 16-20—Washington, D. C.
NATIONAL CONFERENCE ON CITIZENSHIP. Annual Conference (Hotel Statler). Dir., Carl B. Hyatt, Dept. of Justice, Washington, D. C.

***May 17-18—Ocean City, Md.**
MARYLAND-DELAWARE WATER AND SEWERAGE ASSOCIATION. Annual Convention (Hotel Commander). Sec.-Treas., W. McLean Bingley, 2411 N. Charles St., Baltimore 18, Md.

May 17-19—Vancouver, B. C.
AMERICAN WATER WORKS ASSOCIATION—Pacific Northwest Section. Annual Meeting. Sec., O. P. Newman, Boise Water Corp., Boise, Idaho.

May 21-23—St. Louis, Mo.
MISSOURI ASSOCIATION OF PUBLIC UTILITIES. Annual Convention (Jefferson Hotel). Sec., Hinkle Statler, Merchants Bank Bldg., 101 W. High St., Jefferson City, Mo.

May 21-23—Winnipeg, Man., Canada
AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Annual Meeting (Royal Alexandra Hotel). Sec., A. E. Berry, Ontario Dept. of Health, Parliament Bldgs., Toronto 2, Ont.

***May 22-25—Boston, Mass.**
NATIONAL INSTITUTE OF MUNICIPAL CLERKS. Annual Conference (Copley Plaza Hotel). Pres., Arthur J. Shinners, Town Hall, Brookline, Mass.

***May 24-26—Johnstown, Pa.**
EASTERN ASSOCIATION OF FIRE CHIEFS. Annual Convention (Hotel Stanwix). Sec., Charles E. Clark, Box 271, Wayne, Pa.

June 7-8—Springfield, Mass.
NEW ENGLAND SEWAGE WORKS ASSOCIATION and NEW YORK SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Fourth Joint Meeting (Hotel Kimball). Secs. (New England), Walter E. Merrill, 511A State House, Boston 33, Mass.); (New York) Ralph E. Sweeney, 21 N. Broadway, White Plains, N. Y.

June 8-9—Seattle, Wash.
ASSOCIATION OF WASHINGTON CITIES. Annual Convention (Olympic Hotel). Exec. Sec., Chester Biesen, 250 Smith Hall, University of Washington, Seattle 5, Wash.

***June 11-13—London, Ontario, Can.**
CANADIAN FEDERATION OF MAYORS AND MUNICIPALITIES. Annual Conference (Hotel Lincoln). Exec. Dir., George S. Mooney, Office 22, Mount Royal Hotel, Montreal, Quebec, Canada.

June 13-17—Mackinac Island, Mich.
NATIONAL ASSOCIATION OF TAX ADMINISTRATORS. Annual Convention (Grand Hotel). Exec. Sec., Charles F. Conlon, 1313 E. 60th St., Chicago 37, Ill.

***June 14-16—Niagara Falls, N. Y.**
NEW YORK STATE CONFERENCE OF MAYORS AND OTHER MUNICIPAL OFFICIALS. Annual Meeting (Hotel Niagara). Exec. Sec., Morgan Strong, 6 Elk St., Albany, N. Y.

***June 14-16—Rochester, Minn.**
LEAGUE OF MINNESOTA MUNICIPALITIES. Annual Convention (Municipal Auditorium). Exec. Sec., C. C. Ludwig, 15 University Library, Minneapolis 14, Minn.

***June 20-22—Columbus, Ohio**
OHIO SEWAGE AND INDUSTRIAL WASTES TREATMENT CONFERENCE. Annual Convention (Neil House). Sec.-Treas., John E. Richards, 301 Ohio Depts. Bldg., Columbus, Ohio.

***June 25-27—Detroit, Mich.**
MICHIGAN ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Gratiot Inn). Exec. Sec., E. B. Wilson, Detroit Leland Hotel, Detroit 26, Mich.

June 29—Trenton, N. J.
AMERICAN WATER WORKS ASSOCIATION. New Jersey Section. Summer Meeting (Inspection of De Laval Steam Turbine Company Plant, and Luncheon). Sec., C. B. Tygert, Box 178, Newark 1, N. J.

June 24-26—Philadelphia, Pa.
PENNSYLVANIA ASSOCIATION OF TOWNSHIP COMMISSIONERS. Annual Meeting (Bellevue-Stratford Hotel). Sec.-Treas., H. A. Fritschman, 2325 Darby Rd., Havertown, Pa.

June 28-30—Biloxi, Miss.
MISSISSIPPI MUNICIPAL ASSOCIATION. Annual Convention (Buena Vista Hotel). Mgr., George L. Sugg, Lampton Building Annex, P. O. Box 531, Jackson, Miss.

July 5-7—Milwaukee, Wis.
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Annual Convention (Hotel Schroeder). Sec.-Treas., Keith L. Seegmiller, 1616 Eye St., NW., Washington 6, D. C.

***July 24-26—New York N. Y.**
NEW YORK STATE ASSOCIATION OF CHIEFS OF POLICE. Annual Convention (Hotel New Yorker). Exec. Sec., R. W. Morris, 328 State Tower Bldg., Syracuse, N. Y.

***Aug. 14-17—Grand Rapids, Mich.**
INTERNATIONAL ASSOCIATION OF FIRE CHIEFS. Annual Convention (Pantlind Hotel). Gen. Mgr., James E. Jagger, 22 E. 38th St., New York, N. Y.

Aug. 22-24—State College, Pa.
PENNSYLVANIA SEWAGE AND INDUSTRIAL WASTES ASSOCIATION. Annual Conference (Pennsylvania State College). Sec.-Treas., Bernard S. Bush, Kirby Health Center, Wilkes-Barre, Pa.

***Sept. 9-13—Poland Spring, Maine**
INTERNATIONAL CITY MANAGERS' ASSOCIATION. Annual Conference. Dir., Clarence E. Ridley, 1313 E. 60th St., Chicago, Ill.

***Sept. 12-14—Minneapolis, Minn.**
AMERICAN WATER WORKS ASSOCIATION—Minnesota Section. Annual Conference (Hotel Nicollet). Sec.-Treas., Leonard N. Thompson, 216 Court House Bldg., St. Paul 2, Minn.

***Sept. 16-19—Detroit, Mich.**
AMERICAN PUBLIC WORKS ASSOCIATION. Annual Convention (Veterans Memorial Bldg.). Exec. Dir., D. F. Herrick, 1313 E. 60th St., Chicago 37, Ill.

***Sept. 23-26—New York, N. Y.**
AMERICAN CHAMBER OF COMMERCE EXECUTIVES. Annual Conference (Hotel Commodore). Exec. Sec.-Treas., Miss Elizabeth Glenn, 1615 H St., NW., Washington, D. C.

***Oct. 3-5—Watertown, S. D.**
SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Convention. Sec., R. D. Falk, Law Bldg., University of South Dakota, Vermillion, S. D.

***Oct. 8-12—Chicago, Ill.**
THIRTY-NINTH ANNUAL SAFETY CONGRESS AND EXPOSITION. Address inquiries to: Housing Bureau, 39th Nat'l Safety Congress, c/o Nat'l Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

She photographs the pages fast as she turns them

SINCE 1947 Kent County (Michigan) has been using Recordak microfilming on an extensive scale to protect valuable records . . . to save 98% in filing space . . . and to simplify reference.

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Learn the low cost of putting Recordak microfilming to work for you. There's a complete line of Recordak Microfilmers designed for varying requirements—9 models all told. And all are now offered on an *attractive purchase or rental basis.* Write Recordak Corporation (*Subsidiary of Eastman Kodak Company*), 444 Madison Avenue, New York 22, N. Y.

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming—and its application to government routines

"Recordak" is a trade-mark

Typical cross section of documents now being put on Recordak microfilm in Kent County Recorder's Office

- Alimony checks
- Annual corporation reports
- Bank statements
- Birth certificates
- Cases in Justice Court
- Cash receipts
- Certificates of conviction
- Daily cash balances
- Death records
- Deeds
- Journals
- Ledger sheets
- Marriage records
- Mortgages
- Payroll checks paid
- Probate court calendars
- Receipts
- Register of warrants paid
- Revenue vouchers
- Special orders, decrees
- Tax sales notices
- Transfer vouchers
- Treasurer's receipts
- Vouchers paid
- Wills

CHICAGO PLACES RECORD ORDER for TROLLEY COACHES

Trolley coaches and Chicago are old friends—and good friends too!

When this record-breaking order of 349 new coaches is delivered, Chicago will be the biggest operator of these modern electric vehicles in the country.

Successful experience played a major part in CTA's decision to order this record number of electrics. This experience dates back more than 20 years—back to the pioneer days of trolley coach operation.

But, the "pioneer" days are long since gone. Today trolley coaches, combining the best features of electric vehicles and motor buses, are operating successfully in 67 cities throughout the country. ***General Electric Company, Schenectady 5, N. Y.***

GENERAL ELECTRIC

Traffic Control and Facilitation

Reducing Traffic Congestion With Light Rapid Transit

By S. J. VOUCH
Urban Transit Division
General Electric Company
Erie, Pa.

On February 25, 1951, the Chicago Transit Authority assigned 75 new, streamlined rapid-transit cars to the Logan Square-Milwaukee Avenue subway service. The new run is 13 minutes faster than the Logan Square "L," which it replaces.

TRADITIONAL METHODS for loosening the strangle-hold that traffic congestion has secured on our large cities include one-way streets, parking bans, and even the complete prohibition of private vehicles in certain key areas. They are palliatives, aimed primarily at the moving of vehicles. The fundamental transportation problem is that of moving people. About 45 times as many vehicles are required to transport a given number of people by private automobile as by rapid-transit cars. That is why municipal officials who study such facts as given in the accompanying table are turning to mass transit vehicles on private right-of-way as the only method that can reduce the number of vehicles on the streets. Where it can be applied, rail rapid transit helps in solving the problem of traffic congestion.

Over the years, installations in New York, Boston, Chicago, and Philadelphia have demonstrated that people can be moved most effectively by multiple-unit, rapid-transit trains. Other forms of surface transportation are also needed to act as feeders, but rail rapid transit forms the backbone of any high-capacity, efficient transportation system.

The Transit Research Corporation made a contribution of lasting benefit to the industry and the public when it developed the Transit Presidents' Conference Committee streetcar. As the next logical step, the same group has cooperated with transit operators and suppliers to produce a set of specifications for a standard lightweight rapid-transit car. Transit authorities in Chicago and Boston have already placed orders for this type of car to replace or supplement existing rolling stock. Cleveland and Toronto are inquiring into the possibility of applying it to their rapid-transit lines. Studies are being made in San Francisco and Los Angeles, where increasing traffic has resulted in intolerable street congestion.

Because rapid-transit service imposes more exacting operating conditions than are found in the usual surface transportation, General Electric engineers designed a new control group and traction motor specifically for this class of service. The result is equipment that is simple to install, reliable in operation, easy to maintain, and which possesses the smooth performance for which the PCC streetcar has become famous.

Table Showing Passengers per Vehicle per Hour

Type of Vehicle	500	1,000	*Number of Passengers per Hour* 5,000	10,000	15,000	20,000	40,000
			Number of Vehicles per Hour				
Automobile (1.75-passenger, normal average)	286	572	*2,860	*5,715	*8,570	*11,430	*22,860
Bus, 30-passenger (40-passenger, average peak load)	13	25	125	*†250	*†375	*†500	*†1,000
Bus, 44-passenger (60-passenger, average peak load)	9	17	84	*†167	*†250	*†334	*†667
Trolley Coach, 48-passenger (72-passenger, average peak load)	7	14	70	139	*†208	*†278	*†556
PCC Streetcar, 54-passenger (80-passenger, average peak load)	7	13	63	125	*†188	*†250	*†500
PCC Rapid Transit, 10-car train (80-passenger, per car, average peak load)	...	2	7	13	19	25	*‡50

* More than one traffic lane required.
† 24-second headway minimum for one lane.
‡ 1.5 minute minimum train headway, one track.

Progressive Solution

Transit management as well as city planning engineers recognize that a bold as well as progressive policy is called for in meeting today's transportation problems. In the larger cities the PCC-type rail rapid-transit car represents a long step in the direction of solving this problem in a practical and economical manner.

JOE PRISMO

for SURE PERFORMANCE!

Joe Prismo is no fair weather boy. He glows if the road shows. As long as headlights can penetrate the gloom of a sudden Spring downpour, Joe Prismo will be there to guide the way in safety.

The durability and longer retention of reflective qualities in all Prismo Products have been proven by heavy traffic road tests and exposure to adverse weather conditions. Prismo Products owe their reliability to the superior reflective quality of crystal clear spheres held in a "bull dog grip" by a tough and wear resistant plastic binder.

Prismo Laboratories, staffed by technicians of long traffic safety experience are constantly seeking product improvement through research and experiment.

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HUNTINGDON, PENNA.

The SPHERE of SAFETY

What New Parking Projects Cost in Boston

BOSTON, MASS., wants to borrow a second $5,000,000 to provide off-street parking facilities. This raises the questions: How was the first $5,000,000 spent? Where did the off-street parking program stand at the close of 1950? What will it take to complete the program?

Back in 1946 a joint study by the Traffic Commission and the Planning Board revealed that in the downtown business area of the city east of the Common, there was an immediate need of slightly under 9,000 car spaces. Private garages and parking lots were supplying only about 3,200 spaces. Since then, the city has put in operation two open-air parking facilities and one parking garage. The lots have space for 200 and 225 vehicles, respectively. The city-built garage for 364 vehicles opened its doors to business on September 1, 1950.

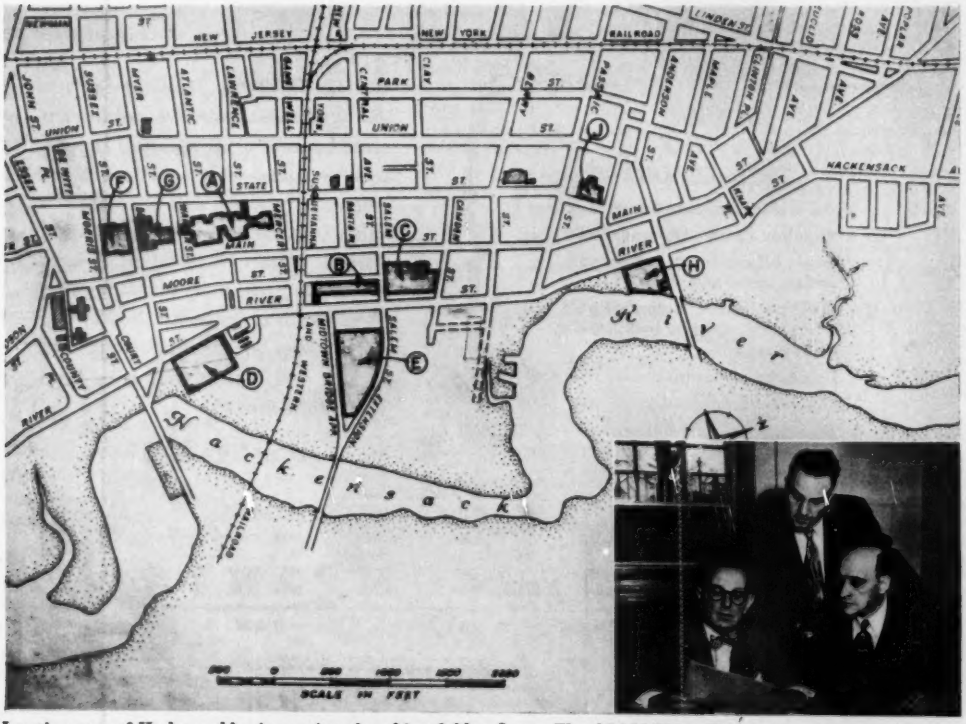
Of the first $5,000,000 loan sanctioned four years ago, the city has borrowed $2,000,000 and will probably borrow the remaining $3,000,000 in May. To November 30, 1950, the city had spent $1,251,069, chiefly for land and garage construction at Lincoln and Essex Streets. The total cost of the first city-built garage will be $725,860, or about $1,994 per car space. The expenditures made and planned add up to $5,400,000. The city will eventually have three permanent parking garages from the proceeds of the first $5,000,000 loan.

The second $5,000,000 loan, if approved by the Legislature, will provide four more garages that will add about 2,200 car spaces to the 1,764 that will be provided out of the first $5,000,000. In other words, the full program will produce off-street parking space for between 3,500 and 4,000 vehicles. This program should go about half-way in making up the city-wide deficit of some 7,500 car spaces as estimated by the Traffic Commission.

Hackensack Untangles Its Business District

ACTING on Parking Authority recommendations, the Hackensack, N. J., City Council commenced development of parking areas for 2,905 automobiles adjacent to Main Street stores from Anderson to Morris Streets. The program, estimated at $2,000,000, will require two years and will be self-amortizing over a period of 40 years. The program will not affect the city's tax rate in any way and is expected to attract thousands of new shoppers. Consultants on the project are Parsons, Brinckerhoff, Hall & MacDonald, at 51 Broadway, New York 6, N. Y.

Parking facilities adjacent to and on Main Street, according to Stuart D. Currier II, Hackensack's city planner, already accommodate 10,100 automobiles, and include private, public, and metered parking areas. The new parking plan, covering nine areas adjacent to Main Street, will provide an additional 2,905 parking spaces for a grand total of 13,005 spaces. These facilities are expected to take care of 100,000 automobiles per day in the shopping district of Hackensack.



Location map of Hackensack's nine projected parking fields. Inset: The $2,000,000 self-amortizing plan is signed by Emil J. Habrich, Chairman of the Parking Authority; Dominick Fondo, Authority attorney; and Mayor A. R. Granito.

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THE Hubbard Municipal Type Bracket is a favorite in built-up areas because of its pleasing appearance and adaptability. The bracket is internally wired and adaptable to either internally or externally wired systems. It may be installed close to the top of the pole for maximum elevation. It is easily installed by one man, comes in nominal lengths of 3, 4, 5, and 6 feet, with rises from 16 to 26 inches.

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"Hang the Load on Hubbard Hardware!"

If Courtesy Doesn't Work That's "Fine" in Richmond, Ky.

Chief of Police W. J. Mason, of Richmond, by one of 262 Duncan meters.

WHEN an officer in Richmond, Ky. (population 7,335), finds one of our 262 Duncan parking meters on violation, he puts a nickel in the meter for the car owner and leaves an envelope on the windshield. If, when the officer returns an hour later, the meter is again in violation, he takes the envelope and leaves a ticket for violation of the meter ordinance. The owner or driver must pay $1 within 36 hours or face a warrant; then the penalty is $1 to $19 and court costs. After trying this plan for 60 days, we have decided to continue it.

W. J. MASON
Chief of Police
Richmond, Ky.

On Two New York Arteries—240 Stop Signs

IN ANOTHER move to facilitate traffic movement on major arteries and to reduce accidents arising from conflicts in right-of-way at intersections, the New York City Department of Traffic announced on February 5, 1951, the establishment of Horace Harding Boulevard (8¼ miles) and Union Turnpike (7 1/3 miles) in Queens Borough, as "through" streets with the installation of stop signs on all streets intersecting these thoroughfares where not controlled by traffic signals.

A total of 240 signs have been erected at 179 intersections. The sign is the standard type, octagonal, 24 inches in diameter, with black lettering on a reflectorized gray band across a yellow background and surrounded by a black border. Made by Pfaff & Kendall, 88 Foundry St., Newark 5, N. J., they have been erected on posts 7 feet high, which prevent them from being obscured by parked cars. The posts are painted in aluminum for night visibility.

Eight Signs in One; It Also Revolves

THE crew of the Toledo, Ohio, Municipal Service Department is protected while working by a new sign with a light-weight molded-plastic vane, reinforced with Fiberglas strands, which revolves in the breeze and calls motorists' attention to men working on projects of the harbor and bridges, water works, and street divisions.

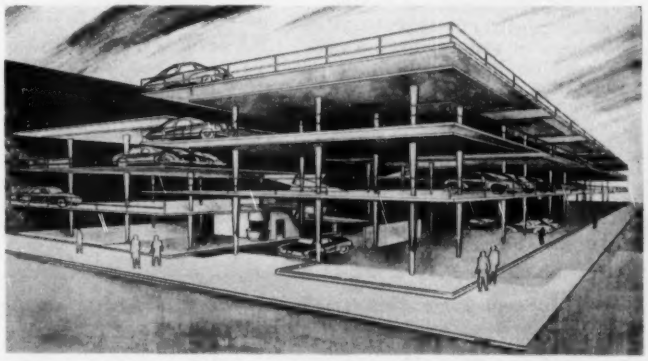
The base is constructed to keep the sign upright in a wind. The signs are effective for protection of crews in all types of sidewalk and road construction,

in school areas, and for general traffic guidance. The sign, manufactured by Roto-Signal, Inc., Brecksville, Ohio, has eight lettered sides for visibility from all directions.

Unit Building Design Lowers Cost Of New Orleans Parking Garage

THE principle of unit buildings—the arrangement of identical parts so that the completed structure is composed of a repetition of the same units, like a set of toy blocks—was used in the construction of a New Orleans parking garage described by L. G. Farrant and W. C. Harry, consulting engineers, of Miami, Fla., at the 47th Annual Convention of the American Concrete Institute. The 30 units used in the parking garage resembled a set of tables.

A low cost of $400 per car, exclusive of property values, resulted partly from the open decks of the garage, eliminating the need for walls and mechanical ventilation. As a result of the design, the slab was reduced to 7½ inches instead of the 12 inches needed if the garage had been designed as a continuous monolithic structure. Construction economy was possible because concrete did not have to be placed continuously, but could be carried from one unit to another and one slab to another. As the unit buildings are similar, there was a maximum of standardization and reuse of forms. Savings in steel were accomplished by the use of new-style high-bond reinforcing bars which eliminated the use of hooks and reduced anchorage requirements.



The unit buildings used in this New Orleans parking garage resemble a set of tables resting on each other. The principle of unit building is in the arrangement of identical parts, so that the completed structure is composed of a repetition of the same units—like a set of toy blocks. The building is owned by the Blaise Parking Garage, and the receipts from the undertaking have been reported good since it was opened to the public on December 4, 1950.

Don't guess on runway lighting; use

L-M Airport Lighting Engineering Service

The planning of an airport runway lighting system is vitally important. So L-M offers you a complete runway lighting engineering service.

L-M has been in the airport lighting business for many years. Its engineers know lighting. More important, they know what the pilot must see, and do, when he is coming in for a landing. The *aviation* problems of a runway lighting system are as important as the electrical and the optical problems.

L-M has an extensive staff of field and headquarters engineers who are familiar with airport lighting problems and requirements and whose services are available to you.

The service includes analysis of the problem, planning, consultation, specifying of equipment that will meet the requirements and come within the budget; checking of the installation; and instruction of your personnel to assure efficient, economical operation of the lighting.

Get this Engineering Data Check Sheet

Ask the L-M Field Engineer for the L-M Airport Runway Lighting Data Check Sheet, or write Line Material Company, Airport Lighting Division, Milwaukee 1, Wis. (a McGraw Electric Company Division).

LINE MATERIAL... Airport Lighting

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L-M's famous 180,000 cp controllable-beam high intensity runway light, type L 818.

L-M high intensity unit with fixed focus, type L 819.

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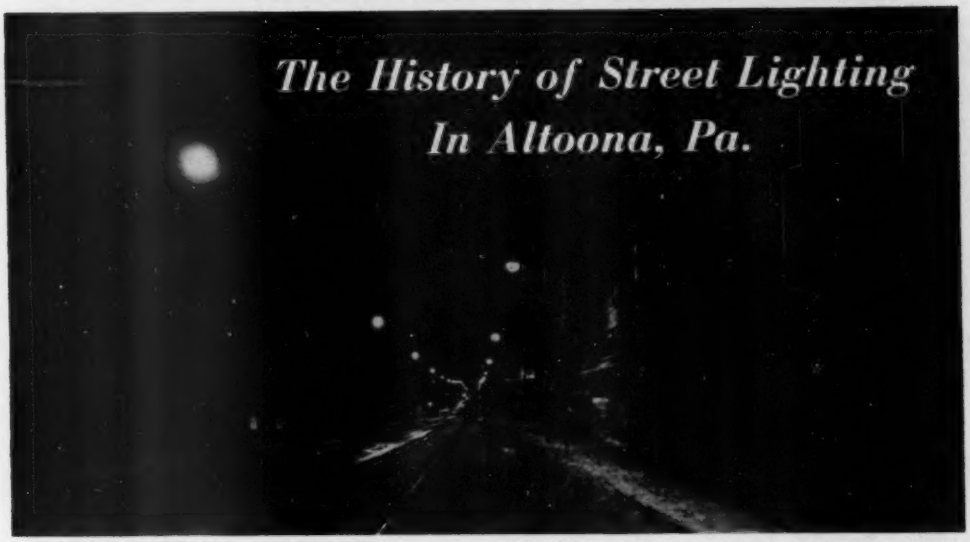
L-M revolving beacon for Class I, II, and III airports.

L-M marker and obstruction lights, single or double.

L-M control panels for large and small airports.

41-R

The History of Street Lighting In Altoona, Pa.



A medium-heavy traffic artery lighted by 4,000-lumen lamps 26 feet high, mounted on Union Metal tubular steel poles.

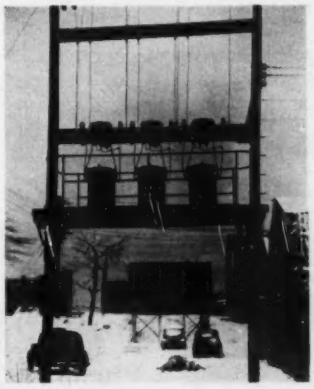
—As told by its former City Electrician, who tended the system for half a century

By C. S. DOWNS

FOR MANY YEARS, through what may be called the old days, our city enjoyed as good surface illumination on our streets as most other cities. The main thing then, and perhaps the principal factor now, is that our annual cost has run about 30% lower because of our ownership of the street-lighting equipment.

Owning the equipment simplified our rate structure down to two utility figures only: electric energy and a fixed charge on wire rental for the overhead system, as explained later. The metered rate quoted the city is the same as any other for a like kw-hr. demand. It is an attractive load, being constant for one-half of the total hours in every year, and 90% off peak. This attractiveness should be seen at once by any utility, once the controversial extras and specialties are removed from the street-lighting rate structure. In our opinion, given the resulting regular kw-hr. rate for street lighting, there is hardly a city in the land that could not double the amount of lighting on its streets.

Altoona, in central Pennsylvania, has a population of about 80,000, covers an area of 8.89 square miles, and has 156 miles of streets. Situated on the eastern edge of the Pennsylvania bituminous coal field, it is served with electricity generated in several power plants along the upper reaches of the Juniata River within 30 miles of the city and convenient to coal mines.



The transformer structure: primary side (above) has three 15-kw, constant-current transformers, 75-ampere automatic oil switches, and primary fuses; secondary side has three protective relays, disconnects, and fuses.

Until 1919, the city streets were lighted by a suspended lamp at each intersection and in the business district by some scattered five-ball units. Ten-year contracts were entered into by the city and the local utility on the unit basis with the outages reported to the Police Department and deducted from the monthly bill.

Twilight of the Five-Ball Era

About this time the merchants and property owners in the central business district petitioned the City Council to improve the street lighting, agreeing to pay the cost on a foot-front basis, the city to settle for the current and maintenance. The city had at this time an organized Bureau of Electricity, working under the Director of Public Safety. The personnel constructed, maintained, and operated the fire-alarm, police-telegraph and -telephone systems, and other electrical activities of the city. In any city these systems must be maintained in a high degree of efficiency, which

JOSLYN'S COMPLETE LINE OF STREET LIGHTING EQUIPMENT INCLUDES . . .

WEDGE BAND LUMINAIRES

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AUTOMATIC LATCHING LUMINAIRES

Which may be re-lamped from the ground; weathertight seal without gaskets is permanent and effective.

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Ideal for 1000 and 2500 lumen lamps in Residential areas.

SENIOR LUMINAIRES

Recommended for high intensity lamps in Business and Boulevard locations.

RADIAL BOWL REFLECTORS

Available in Enameled Steel, Aluminum, or 18-8 Stainless Steel; Radial Wave in Enameled or Aluminum types.

FENCE LIGHTING LUMINAIRES

Most effective units for Defense Plant installations.

SEAMLESS TUBULAR STEEL POLES

We can furnish steel poles for various strength requirements and luminaire mounting heights.

PIPE BRACKETS AND MAST ARMS

The popular upsweep bracket is illustrated; there are many other designs from which to choose.

Our new Street Lighting Catalog lists complete details of various metal and porcelain head combinations, receptacles, sockets, and different I.E.S. light distributions for above luminaires; also data on steel poles, accessories, etc.

Send for your copy today—

Branch offices in principal cities

THE JOSLYN CO.
THE SOUTH EAST-JOSLYN CO.
SOUTHERN JOSLYN CO.
JOSLYN SOUTHWEST CO.
JOSLYN PACIFIC CO.

JOSLYN MFG. AND SUPPLY CO.

Complete Pole Line Equipment

20 NORTH WACKER DRIVE, CHICAGO 6, ILL.

requires skilled personnel of sufficient numbers to do the work under any and all conditions.

The City Council decided that the Electrical Bureau could, with a slight increase in personnel with the help of the Street Department, make a small initial installation. The Westinghouse Arcadian cast iron pedestal, 12 feet to light center, with a 4,000-lumen series lamp enclosed in a 15-inch opal glass shade, was the lighting unit selected. Parkway 5,000-volt single-conductor No. 8-gauge cable was installed in a slot dug about 6 inches deep in the sidewalk along the inside of the curb. The original installation consisted of 84 standards, and the cost was about $1 per foot front. A contract between the utility and the city called for current only at $23 per unit. The cables were extended to the power house, which was then at the western end of the system and supplied constant current at 6.6 amperes. The on-and-off period was controlled manually from the plant. Maintenance of everything outside the power plant was the duty of the city.

With the first installation of the underground boulevard lighting system completed, our efforts were directed to improving and cutting down the cost of the overhead system. In 1920, this consisted of about 1,000 metallic-flame arcs, furnished and maintained by the utility for $60 per unit. Maintenance was difficult because of the trimming and smudging of the shades by the arc. The eight-year contract was about completed. Such contracts had usually been made for 10 years, as that period was regarded as the natural cycle for depreciation and obsolescence of street-lighting equipment. Because the metallic-flame equipment was almost 10 years old and the maintenance high, it was agreed to scrap the units for new equipment, and make a 10-year contract.

The General Electric Type M unit with Holophane Band Refractor and a 4,000-lumen incandescent lamp was the luminaire selected. The initial installation was to be furnished at $30 per unit per year, the city to supply all servicing including replacing burned-out lamps and cleaning.

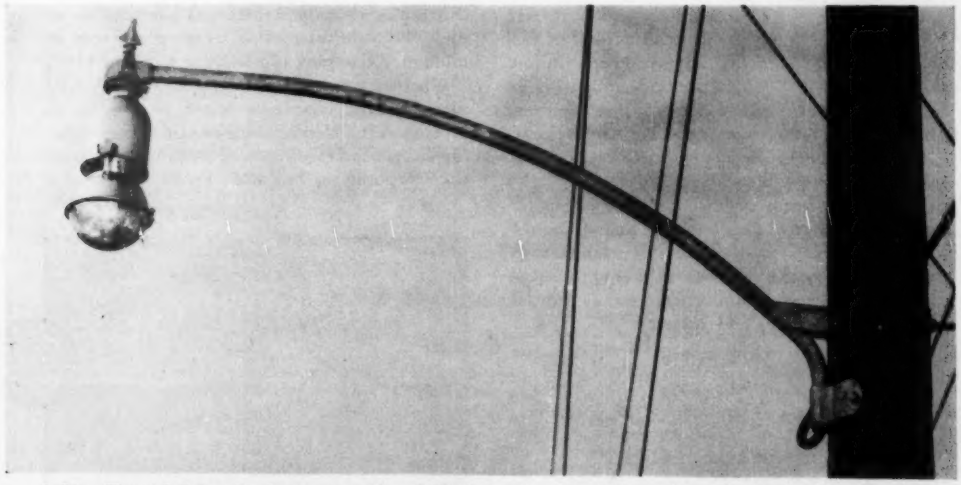
From 1930, Lamp Renewals and Cleaning

The expiration of this contract in 1930 found us in the depths of the depression. Neither the utility nor the city had the finances to renew the street-lighting overhead system which was beginning to wear out. The underground boulevard lighting system needed only routine repairs—such as painting—to be as good as new.

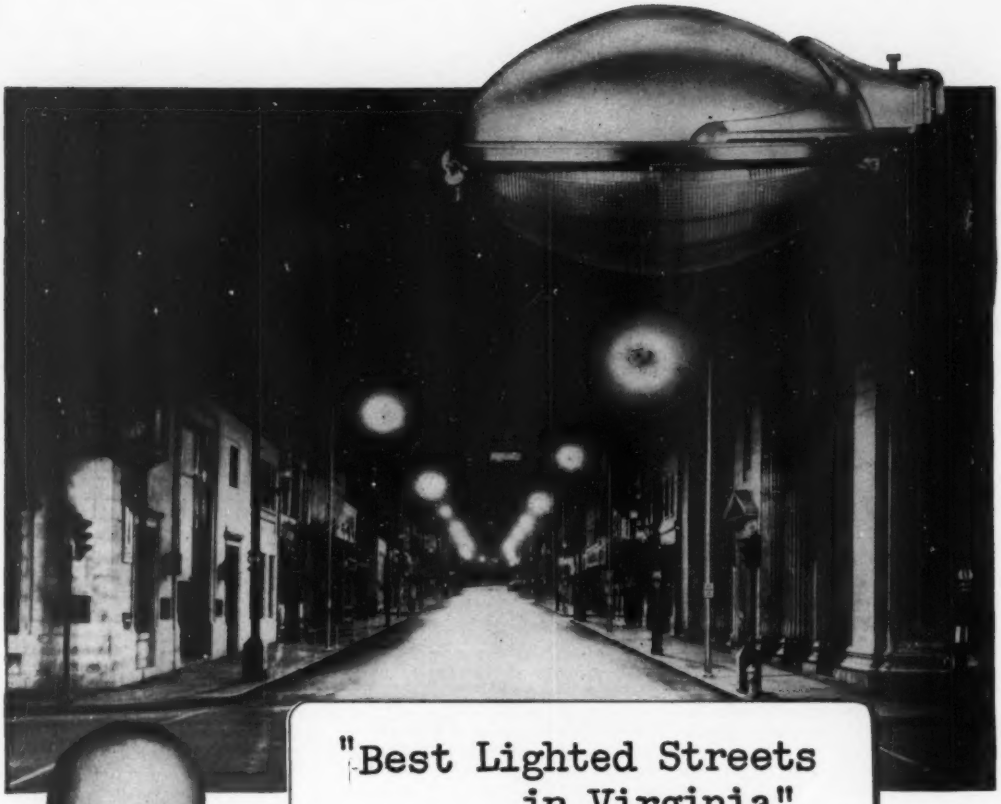
With the aid of an accurate card-record system of each lighting unit, a correct account was kept of all maintenance. Fortified with this knowledge, we were prepared to negotiate an interim contract, as neither the utility nor the city wanted to try to finance the purchase of a new system. A five-year agreement was reached, by which the utility was to drop all obsolescence and depreciation charges, and the city was to make the lamp renewals and do cleaning. The utility would furnish the current and overhead-distribution system at $29 per year for each unit, and $23 for current only for the underground boulevard lights. At the expiration of the contract in 1935, the city owned the 480 underground boulevard lights. The equipment of the overhead system also was really the property of the city as the investment of the utility has been satisfied by the 10-year depreciation charge; but the units in the overhead system were obsolete and a new system was necessary.

To obtain the necessary money from the city fathers for a new system, we had to show that the city could liquidate the investment from the savings that would accrue over the years. The savings would be the difference between the utility's proposal and what it would cost the Electrical Bureau to build and operate the system. We also had to reassure the utility-minded people who pointed with alarm that here was the entering wedge for municipal ownership of the electrical utility. We succeeded in proving that it was just as logical for the city to light its highways as to pave and keep them clean. The utility is in business to generate and sell electricity. Lighting is the problem of the customer. A contract for 10 years was signed by the city and utility and approved by the Pennsylvania State Public Utility Commission.

For the overhead street-lighting system installed by the city, the utility agreed to furnish the cable and wires from the locations of the street-lighting transformers to the cross-arms on street-lighting poles; and electrical energy at 2,300 volts to the primary side of the oil switches installed to control the supply of service to the street-lighting transformers and equipment required for the operation of the street-lighting system. The city furnished the street-lighting transformers, lightning arresters, fuses, disconnects, oil switches, disconnecting safety relays, supporting structures and wiring, fixtures, lighting units, and mast



A Line Material Spherolite luminaire with a 2,500-lumen lamp carried on a 6-foot Hubbard upsweep bracket.



"Best Lighted Streets in Virginia"

City Manager, Arthur Owen, Roanoke, Virginia, points with pride "to the first large-scale application of truly modern lighting in the Southeastern United States". The Westinghouse OV-20 mercury vapor lighting system, installed by the Appalachian Electric Power Company, is making a hit with the citizens:

"We have already ordered a sizable extension to relight our secondary business streets, and we believe that universally favorable response to this lighting system will eventually lead to installation of hundreds of similar units on our arterial approaches, bridges and viaducts."

Arthur J. Owen

What's more, they have invested in a system that is easy to maintain. Hinged construction of the OV-20 makes routine cleaning a matter of minutes. Relamping can be done with one hand.

Whether you buy lighting, install lighting or plan lighting, it will be worth your while to investigate the Westinghouse mercury vapor lighting story. Send for B-3876A, Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pa.

J-04302

YOU CAN BE SURE.. IF IT'S
Westinghouse
PLANNED
LIGHTING SYSTEMS

arms. For operating the underground lighting system the utility supplied energy at 2,300 volts. The city supplied all the street-lighting transformers and all facilities required for turning the current on and off.

The prices to be paid by the city were as follows: for the first 100,000 kilowatt hours consumed during any month 1.4 cents per kw-hr.; for kw-hrs. in excess of 100,000 during any month, 1.25 cents per kw-hr.; for each overhead unit a fixed charge of $9.50 per year, this being the estimated rental cost of the overhead wires.

Type of Equipment

Before starting construction of the new overhead system it was necessary to decide on the type of equipment to be used. As this equipment was to be used largely on the utility poles, it was reasonable and according to the contract that the utility have a voice in its selection. Standards and specifications were so set up that no supplier could have a monopoly. This reasoning resulted in Hubbard and Company and Line Material Company furnishing the 892 mast arms ranging from 8 feet to 18 feet in length, and also the necessary pole-line hardware. These were of the trolley type and the poles were stepped for servicing to avoid cutting by the lineman's spurs. We no longer step the poles, as servicing the units is now done with Murray Crows' Nest aerial ladders.

The overhead system was divided into 19 circuits, and General Electric Company 15-kw constant-current transformers were installed on six structures with a capacity of four each. Five structures were equipped with three, one with four, leaving room for one additional transformer on each of the five structures. The part of the boulevard lighting served by underground cables was divided into four circuits and terminated in a transformer room located in the basement of City Hall which is located at about the center of the underground system.

The transformer structures for the aerial system were located near the center of a clover-leaf pattern of three circuits each. The circuits were designed for 15 kw with the idea of keeping the primary and secondary voltage about equal, and also to avoid the troubles caused by high voltage and the necessity of keeping different sizes of transformers in stock for replacements.

On the transformer structures, the transformers sit on a platform built between two 40-foot poles, 18 feet from the ground and 16 feet long. The transformers sit on a floor built up of 2-inch creosoted wood-plank placed on 6-inch structural steel. Two single disconnects are placed for each circuit above each transformer, and are supported by 6-inch steel members; one single-phase R.C.O.C. automatic oil switch, one R.C.O.C. safety disconnecting switch which, in the event of the opening of the lighting circuit (such as a wire breaking), the primary would be opened and the wire would be dead before it could hit the ground, and two primary fuses and one R.C.O.C. control relay which operates all the automatic oil switches on the structure. This equipment was supplied by the South Bend Current Controller Company.

In the matter of selecting the lighting units for the overhead system, it was decided to use the Line Material Company "Estrolite" in the residential section, equipped with 2,500-lumen lamps and Holophane two- or four-way directional refractor. The General Electric Form 79R, which at that time had just appeared on the market with its aluminum reflector and the Holophane glass refractor, using a 4,000-lumen lamp, was a marked advance in street-lighting-luminaire design. It directs most of the light down on the surface of the street —in an effective pattern—where it should be. This unit was used on all of the heavily traveled highways.

Photoelectric Control

Because the transformers supplying the necessary constant current for the lighting units are located in widely separated sections of the city, a method of controlling the on-and-off periods of the lighting had to be devised. Time, and astronomically operated switches, were ruled out on account of their lack of flexibility in taking care of bright and dark days. Three light collectors or photoelectric cells were placed on the roof of City Hall. The equipment used was Model No. 709 illumination control and was manufactured by the Western Electrical Instrument Corporation of Newark, N. J. It has been in operation for the last 16 years, has never failed, and provides the light when needed, in any weather.

In the first full year of operation (1937) of the completed system, the cost for metered current was $17,770. The fixed charge on wire rental was $9,709. To this should be added $5,000 for materials and labor in maintenance, making a total of $26,770. This was for a total of 1,022 overhead and 480 underground lamps of different sizes.

For the year 1950, the overhead system has increased to 1,533; the underground remained the same. The cost of current had increased to $22,494, and the line rental to $19,162, or a total of $41,656, paid to the utility. Because of the large amount of construction work to be done to take care of the additional units, two second-class linemen were hired in 1946. We found that in dividing the labor cost of all the employees between the street-lighting and all other electrical work, 60 cents and 40 cents of each dollar spent was a close division. And of a total payroll for 1950 of $18,000, street lighting was charged with $10,800. This makes the total 1950 charge $52,456 or $0.66 per capita.

We know that we do not measure up to the Illuminating Engineering Society standards of street illumination, but we have started in this direction. The city's policy is to relight the accident intersections and the congested stretches of traffic arteries and business streets. During 1950, some 10 to 15 luminaires of 15,000-lumen intensity were installed at main intersections. In addition, in the business district 20 cast iron standards 12 feet high were replaced by 25-foot Union Metal poles carrying 79R (with Holophane refractors) General Electric luminaires suspended from 4-foot Hubbard upsweep brackets.

In the residential district, 50 new units were installed, 35 to 40 of them in entirely new locations. They are General Electric and Line Material luminaires of the suburban type on Hubbard upsweep mast arms—4 to 16 feet in length. Installation and lamp-replacement are facilitated by the Crows' Nest ladder.

At a particularly dangerous intersection here in Altoona, where five streets come together, twin mercury-vapor luminaires have been installed. As the rest of the city is lighted by incandescent fixtures, both old and new, this "different-looking" intersection has received much favorable public comment, and accidents at the location have dropped sharply.

The 1951 program is considerably more extensive. Overloaded circuits are being revamped and improvements are being pushed over the entire city.

Fluorescents to Light Norfolk-Portsmouth, Va., Tunnel

THE new $18,500,000 Elizabeth River tunnel-bridge project, between Norfolk and Portsmouth, Va., will ease the traffic congestion surrounding the Norfolk area. The new project is a two-lane tunnel and a four-lane bridge.

According to General Electric engineers, the latest in tunnel lighting will be incorporated in the 3,300-foot underwater link. Four continuous rows of fluorescent light provide high-intensity portal light, which graduates in intensity to the normal tunnel lighting. The tunnel, scheduled to be completed in 1952, will be built by Merritt-Chapman and Scott, of New York City.

MONOTUBE FLOODLIGHTING POLES 40 TO 100 FT
MONOTUBE STREET LIGHTING POLES
MONOTUBE SMALL AREA LIGHTING POLES 20 TO 40 FT

Extra guards without increasing the force!

MONOTUBES meet every outdoor lighting need

PUTTING Monotube street lighting or floodlighting poles on duty is just like adding extra guards. For they help modern lighting equipment do one of its prime jobs—*safeguarding property and people*—especially important as we face wartime's uncertainties.

And Monotubes are properly engineered for any lighting need. In street lighting, for example, they meet all requirements for business, arterial and residential streets, in communities of every size.

Likewise, Monotube floodlighting poles come in standard types and sizes from 20 to 100 feet—ideal for protecting vital municipal facilities, utility areas, defense plant grounds, construction work, railroad yards, parking areas . . . *every* kind of facility or activity.

Best of all, both Monotube street lighting and floodlighting poles are well known for exceptionally easy, simple installation. They serve for years with little if any maintenance.

Find out *now* how you can give vital areas extra nighttime protection at minimum cost with durable, steel Monotubes. For information, write to The Union Metal Manufacturing Co., Canton 5, Ohio.

UNION METAL

Monotube Street and Floodlighting Poles

Planning Parks And Recreation

(Continued from page 140)

A Guide for Planning Facilities for Athletics, Recreation, Physical and Health Education. Published for National Facilities Conference by the Athletic Institute, 209 S. State St., Chicago, Ill. 1948.

Recreation Areas—Their Design and Equipment, by George D. Butler. Published by A. S. Barnes & Co., 67 W. 44th St., New York 18, N. Y. 1947.

Recreation Manual, Vol. 5. Pennsylvania Department of Commerce, State Planning Board, Harrisburg, Pa. 1949.

Designing the Central School Plant as a Community Center. University of State of New York, State Dept. of Education, Albany, N. Y. 1945.

A Guide for Planning School Buildings, by Eugene B. Elliott. Bulletin 338, Dept. of Public Instruction, Lansing, Mich. 1945.

Field and Court Dimensions. Wilson Sporting Goods Co. 1944.

Care and Construction of Tennis Courts. U. S. Lawn Tennis Association. 1945.

Reinforced Concrete Tennis Courts. Portland Cement Association, National Press Bldg., 14th and F Sts., NW., Washington, D. C.

Concrete Grand Stands. Portland Cement Association.

Concrete Swimming Pools. Portland Cement Association.

Minimum Sanitary Requirements for Swimming Pools and Bathing Beaches. Illinois Dept. of Public Health. 1945.

Lighting Outdoor Sports. General Electric Co., Schenectady, N. Y. 1945.

Standard Floodlight Layouts for Sports Areas. National Electrical Manufacturers Association, 155 E. 44th St., New York 17, N. Y. 1949.

The following publications of the National Recreation Association, 315 Fourth Ave., New York 10, N. Y., will be found very helpful:

Standards of Municipal Recreation Areas

Standards: Playgrounds, Playfields, Recreation Buildings, Indoor Facilities

Standards for Neighborhood Recreation Areas and Facilities

Surfacing Playground Areas

Planning a Community Recreation Building

Community Recreation Buildings as War Memorials

Playground Shelter Buildings

The Planning of School Grounds for Community Use

Elysium
For the City Dweller

The sky above is the faintest blue;
Trees stir, sunshine comes filtering through;
The lake is calm and ringed with green;
A robin hops across the scene;
A squirrel leaps from limb to limb,
(Of small concern's man's world to him!)
A butterfly flutters yellow wings;
Somewhere above, a warbler sings.
And all is beautiful and clean,
And here a man can feel serene.

To reach this spot, must we take train,
Or board a ship or aeroplane?
No. One spring morning make your mark
A stroll in the dew-fresh city park.

—A. S. Flaumenhaft

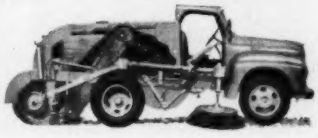
GET READY FOR CIVIL DEFENSE with MOBIL-SWEEPER

1
For decontamination of stricken areas, Mobil-Sweeper can scour miles of pavement, spraying 200 gallons of decontamination solutions per trip.

2
Keeping roads open and in usable condition is essential. Roads must be swept clean of debris injurious to tires.

3
Mobil-Sweeper's 55 m.p.h. speed permits it to make fast emergency trips or travel in military convoys to stricken areas. No other sweeper is as adaptable for emergency use nor as safe.

GETS STREETS CLEANER . . . AT LOWER COST



You can balance your street cleaning budget through the greater efficiency of a Mobil-Sweeper. Ten years of development bring you unsurpassed sweeping action. The longer draught arms on the rear pickup broom are "full-floating" in the true sense. Deepest dips get a clean sweep where ordinary sweepers would skip over refuse. You get a more thorough job on gutters because Mobil-Sweeper employs the "Decreased Arc" type gutter broom segment that retains its flipping action and gives hundreds of extra miles of clean sweeping. The 200-gallon water tank saves on stops for refills. *Don't be fooled on dirt hopper capacity* . . . be sure that your sweeper fills to its rated capacity every time under normal operating conditions. Mobil-Sweeper fills its 2⅔ cu. yd. hopper to the overflow every time—that's what counts. The powerful International Harvester engine lends itself to your standard type maintenance. Your operator is safer in Mobil-Sweeper with its shatterproof windshield, steel cab and 4-wheel hydraulic brakes. Write for details on how your community can save on street sweeping costs.

MOBIL-SWEEPER
DIVISION OF THE CONVEYOR CO
3260 E. SLAUSON AVENUE LOS ANGELES 58, CALIF.

THE CONVEYOR COMPANY AC-5
3260 East Slauson Avenue, Los Angeles 58, Calif.
Gentlemen:
Please send catalog with complete details and specifications for the Mobil-Sweeper.
Name_____ Title_____
Address_____ City_____
County_____ State_____

DRIVES MUGGERS TO COVER

Experience proves that crime shuns well-lighted streets. A Chief of Police in Iowa, said, of a new lighting installation in his city: "It has cut the crime in that area 90%."

Listen to a Chief of Police, in Tennessee—"...helped reduce the rate of murders and major crimes of violence 70 to 90%..."

Or the Chief of Police in a Texas community. "We have practically eliminated assaults, purse snatching, and robbery on three streets by relighting them."

Communities everywhere are finding that modern street lighting—besides cutting crime—attracts business, lowers accident rates, stabilizes property values—that it saves more than it costs.

Your electrical utility is keenly interested in your community's prosperity. They have the know-how and the experience to help you modernize your street lighting quickly on an economically sound, planned basis. They can call on General Electric's services for planning and consultation. G-E street lighting equipment has the flexibility to meet the specific needs of your community. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

Let your electric utility street lighting engineer show you how comfortable seeing SAVES YOU FAR MORE THAN IT COSTS

GENERAL ELECTRIC

452-107

City Managers Appointed

(*Continued from page* 152)

has been appointed to take his place as manager of Paris, Texas.

G. W. ROLLER, formerly city clerk of Wray, Colo., became the first manager of this city in February.

J. J. THOMPSON has been appointed manager of Paris, Tenn., to take the place of ARTHUR L. DOW.

Mars Hill, Maine, has appointed DONALD J. WARING as town manager to take the place of JERRY G. HAYNES, who was recently recalled to active military service.

GLENN WATSON has replaced E. KEITH MONTGOMERY as manager of Monte Vista, Colo.

JOHN D. PRESCOTT has been succeeded as manager of Mansfield, Mass., by ERVIN L. WELCH, formerly manager of Richmond, Maine.

Air-Pollution Problems

IF FACTORY stacks emitting waste gases were built 300 to 400 feet or more in height, they might help considerably in preventing the accumulation of smog around factory areas, according to Dr. Morton L. Barad, meteorologist of the General Electric Company.

Dr. Barad, who is connected with the Hanford Works in the State of Washington, operated by the General Electric Company for the Atomic Energy Commission, reported to the recent New York meeting of the American Meteorological Society on his studies of temperature changes in fogs. These indicate the possibility of a mechanism by which factory smokes and gases may combine with fog to form smog in strong concentrations at ground level.

Part of the meteorological equipment at the Hanford Works is a tower 410 feet high. This is equipped to measure the temperature, wind direction, and wind speed at a number of different levels from the ground to the top. Dr. Barad has recently analyzed data obtained with this tower during three different fogs in December 1947 and January 1948.

He finds that in each case, just before the fog formation, the temperature near the ground increased with elevation. A few hours later, after the fog had formed, these conditions were reversed. Then the temperatures in about the first 100 feet dropped slightly. For about the next 200 feet they remained more or less constant, while at the top of the tower, for about 100 feet, temperatures increased again.

Dr. Barad pointed out that this has an important application to problems of air pollution. If stack gases are discharged at heights of less than a few hundred feet, below the upper regions where the air gets warmer with altitude they will tend to settle toward the ground, he said. This is because, during the period of fog, there is gentle vertical spreading of smoke in the air in these lower layers.

Thus, he stated, it may be that with stacks high enough to get the emitted gases to the height where temperature is increasing, such settling of smog would not occur.

If this proves to be correct, declared Dr. Barad, the information will be "important not only for the alleviation of pollution problems with us now but also for the prevention of pollution problems in the future."

Six 1951 Institutes for Chamber of Commerce Executives

BEN B. LAWSHE, Manager, Commercial Organization Department, Chamber of Commerce of the United States, announces the dates, places, and managers of the 1951 Institutes for Chamber of Commerce Executives:

June 17-23—
Western Institute for Commercial and Trade Executives
University of Oregon, Eugene, Ore.
William E. Hammond, Manager
333 Pine Street, San Francisco 4, Calif.

June 17-23—
Southeastern Institute for Commercial Organization Executives
University of North Carolina, Chapel Hill, N. C.
Ed H. Cherry, Manager
619-621 Volunteer Building, Atlanta 3, Ga.

July 8-14—
Rocky Mountain Institute
University of Montana, Missoula, Mont.
J. R. Pratt, Secretary-Treasurer
1310 Rand Tower, Minneapolis 2, Minn.

July 15-21—
Southwestern Chamber of Commerce Institute
Adolphus Hotel, Dallas, Texas
D. Hodson Lewis, Manager
300 Dallas Chamber of Commerce Bldg., Dallas 2, Texas

August 5-12—
Notheastern Institute for Commercial and Trade Organization Executives
Yale University, New Haven, Conn.
Donald Marcellus, Manager-Treasurer
420 Lexington Avenue, Room 1721, New York 17, N. Y.

August 12-18
National Institute for Commercial and Trade Organization Executives
Northwestern University, Evanston, Ill.
S. Spencer Shaw, Secretary
830-834 First National Bank Building, Chicago 3, Ill.

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DIETZ NIGHT WATCH LANTERN

The NIGHT WATCH is strongly made, finished in Contractors' Yellow; Ruby Fresnel Globe with Peep-hole. Also accommodates Dietz Little Wizard and Little Giant Globes. Burns a generous 100 hours. 8" high, 6¾" diameter at non-tip base.

Write for circular.

STRAIGHT-LINE, PENCIL BEAM IS VISIBLE FROM ALL ANGLES, NEARBY OR AT REALLY GREAT DISTANCES.

Its exclusive fresnel globe is moulded with optically perfect prisms, designed to concentrate the light rays into a parallel, vertical beam of greatest possible intensity assuring a safety and warning light of greatest visibility. The NIGHT WATCH is the best burning lantern of its kind.

Exclusive trip-lock releases chimney for easy lighting, etc. Self-locking.

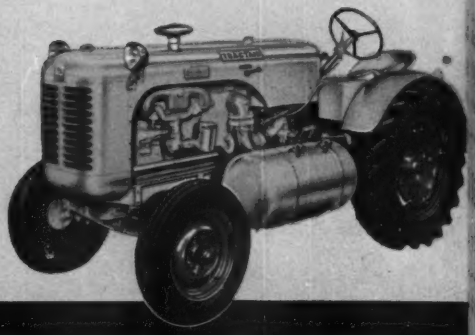
R. E. DIETZ COMPANY · SYRACUSE 1, N. Y.

LE ROI

105 Tractair, equipped with backfill blade, air-powering a Le Roi-CLEVELAND 18-lb. Model 31 Clay Digger. You can also use Tractair to run easy-holding Le Roi-CLEVELAND rock drills, hard-hitting pavement breakers, smooth-handling backfill tampers, and the new light wagon drill.

Le Roi gives you more for your MONEY!

more utility
more profits



TRACTAIR

versatility gives you

Digging

Hydraulically-operated Back-Hoe — Bucket sizes 12" to 22". Digging depth 6 to 7 feet. Swing 60° each side of center — a stop is provided for cutting straight trench. A stabilizing bar protects Tractair from twisting and digging strains. This tractor-compressor-back-hoe combination offers tremendous savings on digging jobs too small for power shovels, too big to be done economically with hand labor. Besides cutting trench, this unit also ideal for cemetery grave digging.

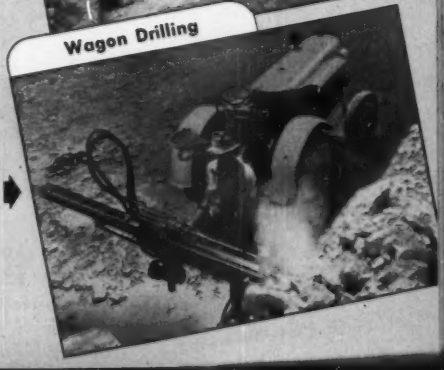
Pavement Patching

Le-Roi CLEVELAND Patcher mounts on the rear platform of a Tractair. It drills closely spaced holes within a 7-foot radius, then breaches the section of pavement loose for easy removal. In this job the bricks were removed first to get to the pavement underneath.

Mud Jacking

Trac-Jac consists of a Le Roi-CLEVELAND air-feed sinker drill mounted on Tractair. Feed and drilling controls are within easy reach of the operator. The mobility of this unit makes it ideal for mud-jacking and many other applications.

Wagon Drilling



Tractair Mobildrill — a compressor and wagon drill in a single, self-contained, self-propelled unit. Universal mounting and swinging boom permit drilling at any angle. Drilling is easier and faster, thanks to Le Roi-CLEVELAND air feed.

Extra Hours of Usage

. . . lets you use economical air power to do more jobs at lower cost

Tractair is a combination tractor and air compressor. Thanks to low center of gravity and good traction, it can go 'most everywhere — doesn't tie up trucks and men for transportation, saves you time and money.

That's why you can put 105 cfm of useful, economical air power to work wherever you need it — use Le Roi-CLEVELAND air tools for breaking pavement, digging, drilling rock, tamping fill, vibrating concrete, driving form pins, and many other tasks.

The money-saving usefulness of Tractair can be multiplied. Just add our front-end loader (with its 8 quickly interchangeable accessories) and you can load, lift, backfill, etc. And Tractair offers you another new attachment, too — a hydraulically controlled back-hoe for digging ditches 12 to 22 inches wide and 6 to 7 feet deep. Air power from Tractair increases the usefulness of the back-hoe by running Le Roi-CLEVELAND breakers whenever it's necessary to break through pavement or frost.

It pays you to investigate Tractair. See your Le Roi distributor — he can show you a unit at work cutting costs with extra hours of usage.

T-16

LE ROI COMPANY

MILWAUKEE 14, WISCONSIN

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CHICAGO chooses...

FEDERAL BEACON-RAY

When the problem is PROTECTION

Even water workers can be safer according to the city of Chicago, Water Pipe Extension Division. This important department has installed Federal 360° warning lights on their service trucks to protect the trucks and workers when on the job. These lights were originally designed to assist police cars, fire apparatus, or ambulances on emergency runs. The beacons of warning cleared the way and proved invaluable in protecting such vehicles when stationed at the scene of an emergency.

The Chicago Water Department states they have men at work in busy streets or intersections, climbing in or out of trenches or manholes, who are in constant danger of being struck by careless drivers. Also handling long lengths of pipe or other materials may be a hazard to passing traffic; the repair truck may have to be parked where it becomes a dangerous impediment. A warning is necessary.

The Federal Beacon-Ray light can often prevent otherwise unavoidable accidents. Mounted on the truck the light has twin spotlights back to back rotating through 360° beneath a plastic dome. The intense twin beams flash a warning to all points of the compass. Blue, green and amber are other color options offered where red is not desired. It is simple to install, is fully weatherproof and requires little or no maintenance.

Full details may be obtained by writing . . .

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Big Business Can Be a Good Neighbor

LARGE corporations increasingly recognize that the "Good Neighbor Policy" need not be restricted to diplomatic and trade relations with Latin America, and, in fact, that it begins in their own communities.

For example, Jackson Martindell, President, American Institute of Management, in listing a series of "Do's and Don'ts in Corporate Public Relations" included the following points in his speech on "Company Manners," February 27, at the College of Business Administration, University of Florda:

> Good company manners cannot be bought, imported, created by specialists, or merely confined to the public relations department.
>
> Just as "every market is a local market" so every officer of a corporation is a local citizen of some community. His active participation in community endeavors is the hall-mark of the public-spirited business leader. This applies as much to the president or chairman of the board as to the branch manager. The executive who fails to participate in community work fails his company.
>
> Good company manners are possible only in companies whose officers were active to some degree in community affairs before being elected to office.

An Example

One company where the above policies have been observed for 76 years is the York Corporation of York, Pa., manufacturers of air conditioning and refrigeration equipment. The company has steadily communicated its policies and practices to its neighbors with language and actions they readily understand.

From the community-wide mailing of the employee publication, *Shop News*, to arranging for speakers to appear before local groups, conducting plant tours, participating in city and county exhibitions and in regional radio broadcasts, providing newspapers of the area with releases on company activities of interest to the community, encouraging their employees to serve with civic group committees and organizations for community betterment, supporting worthwhile charitable organizations and drives, the York Corporation is busy almost 24 hours a day in some aspect of its community life.

Little Things Count

In addition to the planned portions of the York community-relations program, there are a lot of little things in the company's day-to-day contacts with its neighbors that are vitally important in acquiring community good will. These small neighborly acts prove to the community that the desire to be a *good neighbor* is sincere. Some of these miscellaneous activities are participation in parades, community sports, sending off a local team with a band, letting children make use of the company athletic field, lending tables and chairs and other equipment to local organizations, eliminating nuisances, and improving the plant and its surroundings.

FREDERICK HENRY
Marketing Service Bureau
New York City

Newly Formed United Defense Fund Adopts Goal for 1951 Services

A GOAL of $7,399,329 for 1951 services to the armed forces and to communities congested by the national defense effort has been accepted by the board of directors of the newly formed United Defense Fund, Inc.* Community Chests throughout the country will assume the responsibility of raising over $6,000,000, the remainder of which is to be secured from contributors in New York City and other non-Chest sources.

* See THE AMERICAN CITY for February 1951, page 5.

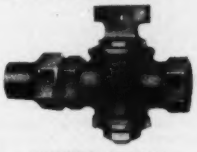
For Complete Service . . .

HAYS

WATER WORKS PRODUCTS

CATALOG No. 5200
Hays Corporation Stop with inlet A. W. W. A. standard thread.

CATALOG No. 5622
Hays Tee for copper to copper connection.



CATALOG No. 5050
Hays Curb Stop for iron pipe to copper service connection.

CATALOG No. 5628
Hays Elbow for Male iron pipe to copper connection.

HAYS Manufacturing Company is one of the largest making a complete line of water service products, and for 80 years has enjoyed the prestige earned by unremitting insistence upon high quality. The HAYS line of fittings and other products is famous throughout the world for easy installation and a long life of trouble-free service.

All HAYS water works fittings are interchangeable with those of other manufacturers and corporation stops can be installed with any standard tapping machine equipment. They are made of highest quality 85-5-5-5 bronze, plugs are ground for perfect fit, specially lubricated for permanent easy turning, and hydrostatically tested at 200 pounds or more. Write for the new HAYS catalog showing the complete HAYS line of water works products.

CATALOG No. 5610
Hays Two Part Union for copper to copper connection.

CATALOG No. 5605
Hays Coupling for Male iron pipe to copper connection.

COPPER BRASS LEAD IRON
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Municipal and Civic Publications

Municipal Index, 1951

THE MUNICIPAL INDEX AND ATLAS, 1951—*American City Magazine Corporation, 470 Fourth Ave., New York 16, N. Y. March* 1951. 827 *pp.* $5.

The 25th Annual Edition of *The Municipal Index* again publishes the most complete and authoritative classifications and listings of manufacturers and suppliers of municipal equipment.

Special features include: "How Garbage Grinders Will Affect Our Cities," "Maintaining the Economy of Diesel Engines," and "Simplification of Municipal Records." The 32-page garbage-grinder section includes complete cost figures and other information on the grinders installed in Jasper, Ind., and answers the questions most asked about garbage grinders. It also includes specifications and other information on the food-waste grinders manufactured by principal manufacturers and suppliers.

Another useful feature of the volume is a list of the preliminary 1950 census figures for the populations of all cities and villages with a population of 2,500 or more. In addition, the regular list of 1940 populations for places with a population of 1,000 or more is also provided.

The directories include lists of council-manager cities and city managers; city and town purchasing agents in places with a population of 10,000 and over; mayors, city engineers, superintendents of water works, street, and sewage-treatment departments; police and fire officials, and state highway officials. There is also a listing of all principal organizations in the local government field.

The regular features of the volume are continued, including the section of maps, and equipment and supply listings for all major categories of municipal needs.

A Guide for Municipal Officials

NATIONAL MUNICIPAL POLICY FOR 1951 — *Published by The American Municipal Association, 1313 E. 60th St., Chicago 37, Ill. January* 1951. 16 *pp.* 50 *cents.*

In this pamphlet, The American Municipal Association reproduces statements of policy, resolutions, and program of action which have resulted from discussion of policy questions at its annual conferences. Inter-governmental relations; highway, traffic, and parking problems; municipal finance; social security and civil defense are some of the subjects covered.

California City Sales Taxes

WHAT'S NEXT IN LOCAL SALES TAXES? — *Published by State Board of Equalization, Division of Research and Statistics, Sacramento, Calif.* 1951. 38 *pp.*

This survey of city sales taxes in California supplements two earlier studies issued in February 1948 and March 1949. Special attention is given to estimates of state sales taxes in all cities of the state, the cost of administering local taxes, and the fiscal effects of certain schemes for integrating state and local sales-tax administration.

Engineering Volume

THE ENGINEERING METHOD — *By John Charles Lounsbury Fish. Stanford University Press, Stanford, Calif.* 183 *pp.* $3.

One of the engineering books that attempts to depart from the factual and probe the philosophical to give the answer to how engineers think. Most engineers probably will be surprised to find their every-day, simple calculations discussed in such a profound and complex manner.

Fire Equipment Standards

NATIONAL FIRE CODE, *Volume IV,* 1951 *Edition —Publication Services Department, National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.* $4.

This edition, which replaces the 1946 volume, contains the complete texts of 38 standard works on extinguishing and alarm equipment. It includes standards on automatic sprinklers and water supplies, fire extinguishers and fire hose, special extinguishing systems, municipal and rural public protection, fire alarm and supervisory systems, employee organization for fire safety, and other miscellaneous texts.

Protecting Records Against Bombings

PROTECTING LOCAL PUBLIC RECORDS AGAINST BOMBING ATTACKS — *Division of Archives and History, State Education Department, Albany, N. Y.* 1951. 19 *pp.*

This pamphlet outlines the job of the custodians of local public records, whose duty it is to determine the essential records, make an inventory of records on file, and apply the protection methods selected as the most efficient and economical.

Recreation Congress Proceedings

PROCEEDINGS OF THE MIDCENTURY NATIONAL RECREATION CONGRESS — *National Recreation Association, 315 Fourth Ave., New York 10, N. Y.* 1951. 176 *pp.* $2.25.

On October 2-6, 1950, Cleveland played host to the participants in the Midcentury National Recreation Congress which is here reported. The opening session included talks and discussions on such topics as the next fifty years in recreation, how business can help, recreation needs in a period of national emergency, the importance of recreation in various cities. Other topics covered during the Congress include recreation on college campuses, in the church, for the handicapped, for overprivileged children; training recreation leaders, organizing playground activities, ideas in arts and crafts; planning for older age groups; securing volunteers; cooperative planning of indoor and outdoor recreation facilities, and standards for sports and athletic programs.

Industrial Development Reports

PROCEEDINGS OF THE 25TH ANNUAL CONFERENCE OF THE AMERICAN INDUSTRIAL DEVELOPMENT COUNCIL—*Available from the Council at 1615 H St., NW., Washington 6, D. C.* 1950. 116 *pp.* $3.50.

This "silver anniversary" publication presents discussions by some of the most experienced men in the country on industrial aspects of community development. Included are discussions on financing industrial expansion, the Mississippi BAWI Plan, zoning for industrial development, conservation of natural resources, advertising for industries, and community industrial surveys. A directory of members of the organization is included in the report.

Poughkeepsie Parking

PARKING FOR POUGHKEEPSIE — *Poughkeepsie Area Development Association, Inc., 52 Market Street, Poughkeepsie, N. Y.* 1951. *Mimeo.* 25 *pp.* $1.

This excellent report provides data on existing curb and off-street parking facilities within the central business district of the city, evaluates these facilities, and finally suggests a program to be adopted in order to help insure adequate facilities in the future. The comprehensive approach in the report should be of general interest to other municipalities struggling with parking problems.

Police Administration Text

POLICE ADMINISTRATION — *By O. W. Wilson. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18, N. Y.* 1950. *First Edition.* 540 *pp.* $6.

Here is a new book which fulfills the need for a definitive study of police administration. It deals with the administrative problems that confront the police executive and recommends procedures for their solution. The author is Dean of the School of Criminology and Professor of Police Administration at the University of California.

Describing in complete detail the organization and operation of a modern police department, the book includes discussion of staffing, equipping, directing, and controlling the force, planning its operations, and maintaining suitable public relations.

Superior administrative and operating practices used by the most progressive police forces are examined and compared to illustrate how police services may be evaluated and strengthened.

The book belongs in the library of every police official and municipality.

Biological Warfare

WHAT YOU SHOULD KNOW ABOUT BIOLOGICAL WARFARE — *Federal Civil Defense Administration, Publication PA-2. February* 1951. 30 *pp. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.* 10 *cents.*

A booklet intended for broad public circulation which briefly describes the facts about biological warfare, and outlines some of the precautionary measures which can be taken to counter possible forms of attack. The booklet makes it clear that an alert public health protection system is the keystone of our defense against biological warfare and urges that every citizen back up the efforts of the organized health services.

U. N. Planning Bulletin

HOUSING AND TOWN AND COUNTRY PLANNING BULLETIN NO. 4—*Published by the United Nations, New York.* 1950. *Available from International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.* 121 *pp.* $1.50.

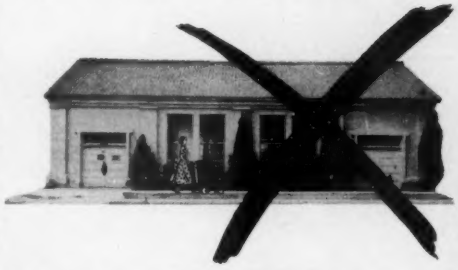
Bulletin No. 4, prepared in connection with the U.N. program of assistance to under-developed areas, recognizes the need of relying largely on the indigenous building materials of the area and of developing simple building techniques. Recent experiments and developments in the "rammed earth technique" of building construction are described and illustrated. A bibliography of recent books and articles on rammed earth construction accompanies the text. A second feature of Bulletin No. 4 is an annotated bibliography, with abstracts, of periodical articles on building, housing, landscape design, and town and country planning.

New Municipal Taxes

SELECTING NEW MUNICIPAL REVENUE SOURCES—*By Robert H. Blundred. The American Municipal Association, 1313 E. 60th St., Chicago 37, Ill.* 1951. *Publication BFD.* 12 *pp.* 50 *cents.*

Revenue sources made available to local governments by grants of new taxing powers to municipalities are very similar in the several states. The more common are sales tax, income tax, business license, local admissions tax, and various excise taxes. Basing his findings on actual experience in the municipalities which have adopted these non-property taxes, the author lists the pros and cons under the various types of taxes mentioned. The bulletin also contains information on the revenue sources especially adaptable to different types of cities, and gives other economic and administrative factors. The author recommends use of a well-balanced public-relations program to meet opposition to new taxes.

COSTS GO DOWN...



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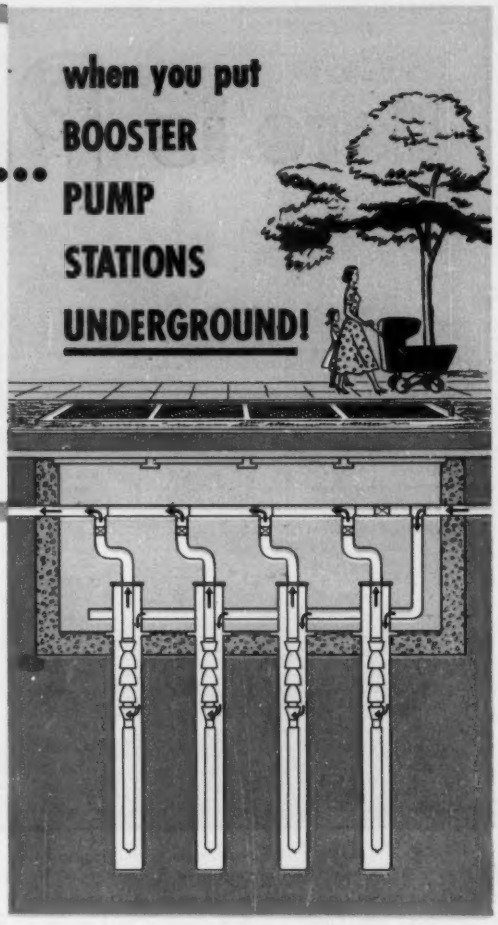

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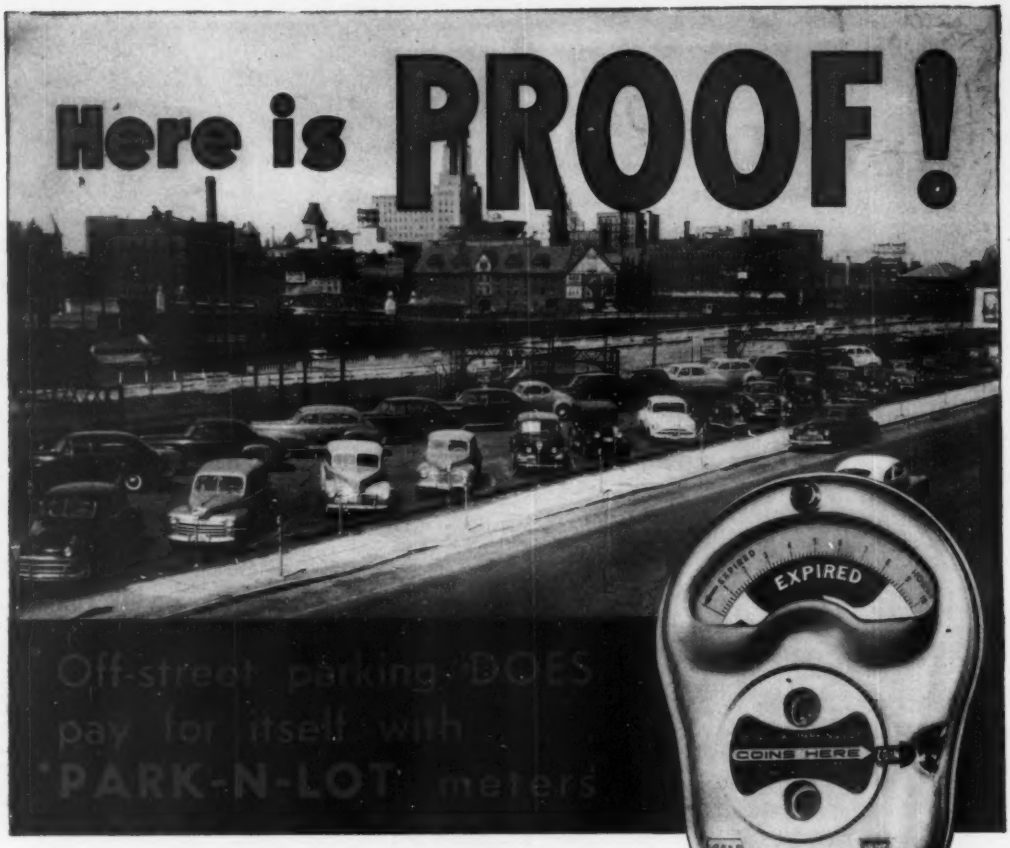

In May 1947 the city administration at Rochester, N. Y., moved to attack the off-street parking problem. A strip of land on South Avenue (see illustration) was acquired and 43 metered parking spaces installed at an average cost of $100.00 per space *including* PARK-N-LOT meters. The entire investment liquidated itself within a year.

The city now has nine off-street areas providing 531 PARK-N-LOT metered spaces, representing an average cost of $179.09 per space exclusive of land and meter costs. With average monthly revenues of $12.92 per meter for the 324 meters in the class A locations (.05 per hour) the city anticipates early liquidation of total cost and is planning extensions and further improvements . . . paid for from meter revenues.

The progressive city administration of Rochester is keeping faith with the citizens who have trusted in them as competent public servants. We congratulate them and the citizens of Rochester.

**The 10-hour model of PARK-O-METER*

Plans and basic designs for parking areas of various size and designs are available to you on request.

ROCHESTER DID IT . . . YOU CAN, TOO!

New Jersey County Finances

COUNTY FINANCES, A FISCAL BACKGROUND FOR THE STUDY OF COUNTY GOVERNMENT IN NEW JERSEY — *New Jersey Taxpayers Association, Inc., Broad Street Bank Bldg., Trenton, N. J.* 1950 *edition.*

This mimeographed report is composed chiefly of a series of tables summarizing revenues and expenditures of New Jersey counties cumulatively and individually. The thumbnail sketch which precedes these tables gives some comparative data on county debt and taxes.

More on Washington's Comprehensive Plan

PEOPLE AND LAND, A PORTION OF THE COMPREHENSIVE PLAN FOR THE NATIONAL CAPITAL AND ITS ENVIRONS—*Published by the National Capital Park and Planning Commission, Washington, D. C. Monograph No. 2, June* 1950. *For sale by the Superintendent of Documents, Washington* 25, *D. C.* 71 *pp.* 40 *cents.*

Monograph No. 2 is fourth in order of publication. Its purpose is to present a full explanation of that portion of the comprehensive plan relating to people and their work and to land use. It presents an analysis of past and present statistics in order to arrive at conclusions and estimates of future needs of the population in the Capital region.

Growing federal employment accounts mainly for the great increase in Washington's population, and a wider distribution of the government's employment places is recommended. The Commission also recommends revised zoning regulations to control density of population, reduce areas zoned for commerce and for multiple dwellings, increase areas zoned for single-family dwellings, and require off-street parking and loading spaces wherever possible.

Champaign-Urbana, Ill. Plan

COMPREHENSIVE DEVELOPMENT PLAN FOR CHAMPAIGN-URBANA, ILLINOIS — *Prepared by Swanson Associates, Bloomfield Hills, Mich., by order of the Community Planning Committee.* 1950. 92 *pp.*

After tracing the scope and objectives of the plan and outlining the economic and social background of the Champaign-Urbana region, the report considers separately residential areas, schools, parks and playgrounds, traffic and transportation, commercial areas and industrial areas. In each case existing conditions are described and recommendations made for future development. Public buildings and utilities, county planning, and zoning are also covered, as are the administration of the plan and its financing. Detailed maps and charts illustrate all phases of the plan, and at the end of the book is the large general-development map.

Wisconsin Regional Development

REGIONAL DEVELOPMENT IN THE UPPER WISCONSIN RIVER VALLEY — *Bulletin of the University of Wisconsin Bureau of Community Development, University Extension Division, Madison* 6, *Wis.* 1950. 23 *pp.*

The purpose of this study (Vol. 3, No. 1 of the Community Development Service) is to promote the formation of a regional-development organization. A case study of Southern Illinois regional-development work leads to the outlining of a regional-development program for the Upper Wisconsin River Valley.

A History of Our Highways

THE STORY OF AMERICAN ROADS — *By Val Hart. William Sloane Associates, Inc.,* 119 *W. 57th St., New York* 19, *N. Y.* 1950. 243 *pp.* $3.

An adventurous approach to the history of our country. Many attractive photographs and maps illustrate this story of how the urgent need for various kinds of roads was met and of the trials and experiences of the men who built our highways. The early stagecoach travelers, Daniel Boone, the covered wagons, the Pony Express, the Erie Canal, and the early railroads are all part of this easily-read, fact-crammed little book.

For Students of American Government

AMERICAN STATE AND LOCAL GOVERNMENT—*By Clyde F. Snider. Appleton-Century-Crofts, Inc.,* 35 *W.* 32*nd St., New York* 1, *N. Y.* 1950. 643 *pp.* $5.00.

Designed for use in colleges and universities, this book attempts to cover both state and local government adequately, without over-emphasizing either. It brings out in Part II the increasing importance of inter-governmental relations. The other sections of the book deal with charters, suffrage, state organization and powers, local organization and powers, state and local functions, and state and local finance. The references at the end of each chapter and the generous use of footnotes should serve as a useful guide to both professors and students desiring additional reading or special reports; and the detailed index at the rear of the book makes possible quick reference to the pages dealing with the subject in question.

Conference on Urban Problems

CREATING BETTER CITIES — *A complete report on the Third Businessmen's Conference on Urban Problems, Washington, November* 20-21, 1950. *Chamber of Commerce of the United States, Washington* 6, *D. C.* 191 *pp.* $1.

This report brings out up-to-the-minute answers on problems facing every municipality, including considerations of national defense.

"Urban Development and National Security," the subject of the first session, deals with federal policies, location of industrial and commercial facilities, and city planning. "Decentralization in American Cities," a paper by the Director of the Census, and "Transportation's Needs of the Day," by the Defense Transport Administrator are quoted in full. Other sessions covered "Financing Off-Street Parking," "Urban Traffic Improvement," and "Urban Redevelopment Today."

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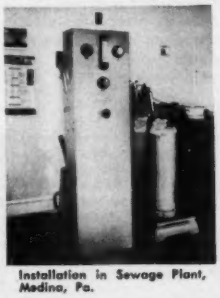

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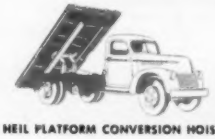

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Municipal Affairs Textbook

MUNICIPAL AFFAIRS—*By Ernest W. Steel. International Textbook ompany, Scranton, Pa.* 1950. 375 *pp.* $5.50.

Written by a professor of sanitary engineering at the University of Texas, the second edition of this volume (first published in 1941) emphasizes the practical viewpoint of particular appeal to engineers. This new edition, the scope of which remains unchanged, presents useful facts with brevity and clarity, the author ignoring wordy philosophizing on governmental theories as he treats the problems faced by the municipality and its executives. Special attention is given to the problems of utilities, including those municipally owned.

Planning and Housing Reports

BALTIMORE, MD.—Inventory of Existing Industries. Industrial Land Use Survey, Preliminary Report No. 1. Baltimore County Planning Commission, 25 W. Susquehanna Ave., Towson 4. Jan. 1951. Mimeo. Tables. Maps. 21 pp.

CHAPEL HILL, N. C.—Regional Planning and Development. Report of a Meeting on the Need for a Program of Education, Research, and Service in Regional Planning, Nov. 1950, at Chapel Hill. Department of City and Regional Planning and the Institute for Research in Social Science, University of North Carolina, Chapel Hill. Jan. 1951. 82 pp.

DENVER, COLO.—Dwelling Code. Prepared by Denver City Attorney's Office. 70 pp. $2.50.

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The Amazing NEW Steel Hardening Compound

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Any plant, Large or Small, can use it without special equipment

HARD-N-TUFF will solve your war steel shortages and priority problems. With HARD-N-TUFF you can use CHEAPER steels and get fine steel performance. Keep drills, cutters, chisels, tools sharper, longer. Keep machines operating longer, faster. Cut machine shut-downs for cutting edge replacements to an unbelievable minimum. Used successfully on all types of tools, parts, dies and other low carbon or high speed materials.

¼" STEEL DRILL MADE "HARD-N-TUFF"

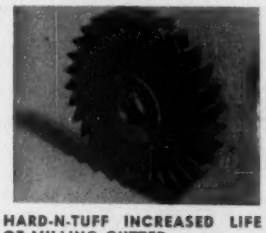
Drill shown is an ordinary ¼" carbon steel drill treated with HARD-N-TUFF. The hole was drilled dry at lowest speed on press in the automobile spring eye leaf. Cutting time less than two minutes each.

STRENGTH AND ENDURANCE ADDED TO SCREWS AND SET-SCREWS WITH HARD-N-TUFF

Three holes, each the size of the core of the lag bolt (minus threads), were drilled in ½" steel plate. The bolt was hardened with HARD-N-TUFF and forced through each hole with 12" wrench. Threads cut by bolt were uniform and reusable. Bolt threads undamaged.

HARD-N-TUFF INCREASED LIFE OF SPECIAL FORMING DIE FOR PIPEWRENCH

The holes and contour of yoke were die-cut from 4130 chrome alloy steel, ⅛" sheet, while flat. Top face of female section (A), was hardened with HARD-N-TUFF. Operation of male die (B), is to bend die cut sheet into form illustrated, (C). Guide pins in (A), were also hardened. Die life was increased by minimum of 300% with substantial savings in spoiled parts and lost manhours.



HARD-N-TUFF INCREASED LIFE OF MILLING CUTTER

Carbon steel milling cutter could be run at only 25% of normal machine speed. When hardened with HARD-N-TUFF, Emmerich Machine Co. reported that machine was stepped up to normal speed and lost machine and manhours were entirely eliminated.

In simple powder form, HARD-N-TUFF is extremely easy to use. Merely heat surface to be hardened, dip or roll in HARD-N-TUFF, reheat and quench. Entire operation only a few minutes. Tested on 1020 carbon steel, produces minimum hardness of 60 Rockwell.

HARD-N-TUFF

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*MICROFILM WINS!

*SUGGESTION TO FILM COUNTY RECORDS TAKES TOP AWARD IN CIVIC CONTEST

"Microfilming county records is 'most likely to promote efficiency and economy'." That was the decision of the Wayne County, Michigan, Board of Supervisors in an employee contest for ideas to improve future operations.

"Microfilm will cut searching time approximately 86%, guarantee maximum safety of records, and save about 99 out of every 100 square feet of space used for the storage of records," County officials say.

Other unexpected benefits are being realized now that the program is in effect. In preparing for microfilming, "lost" records are coming to light. A complete audit of the county records is being obtained. A safeguard against tampering is achieved by making two microfilm copies of important records.

After careful tests of available microfilm equipment, Wayne County chose Film-a-record — machines, readers, processors, storage cabinets. They found the equipment simple to operate, the film completely uniform and greatly superior in quality. *Only Film-a-record offered Microdex, a system of filing right on the film.*

The complete story of Wayne County's microfilming program is told in a new, illustrated folder. For a free copy write to Management Controls Reference Library, Room 1726, 315 Fourth Ave., New York 10, N. Y.

Bulky records occupying almost 90,000 cubic feet are reduced to small rolls of microfilm. Each contains exact copies of approximately 3,000 letter-sized documents.

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NEW HAMPSHIRE—Population and Area of Cities, Towns, and Counties in New Hampshire. Compiled by the New Hampshire State Planning and Development Commission from Preliminary Data Issued by the U. S. Bureau of the Census, and Areas of the United States, 1940. Aug. 1950. Mimeo. 7 pp.

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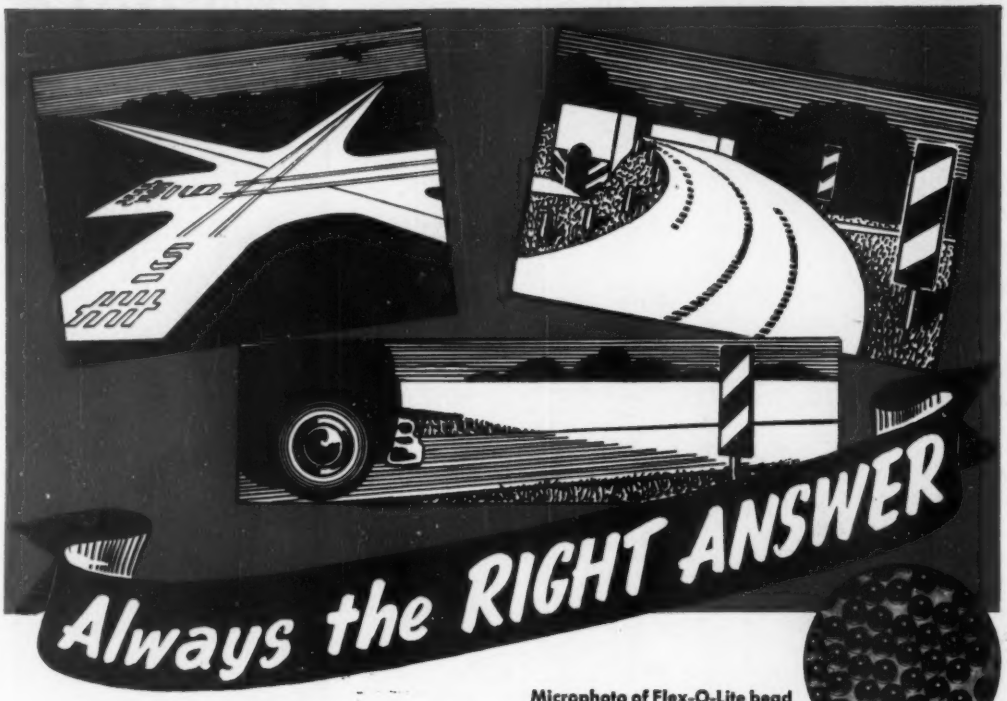

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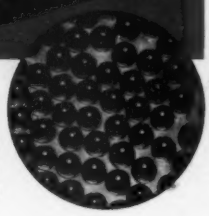

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NEW JERSEY—Joint Meeting of the City of Plainfield, Borough of North Plainfield, and Borough of Dunellen for the Sewage Treatment and Disposal Plant, 1913-50. Illus. Unpaged.

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(*For additional reviews, see page 242.*)

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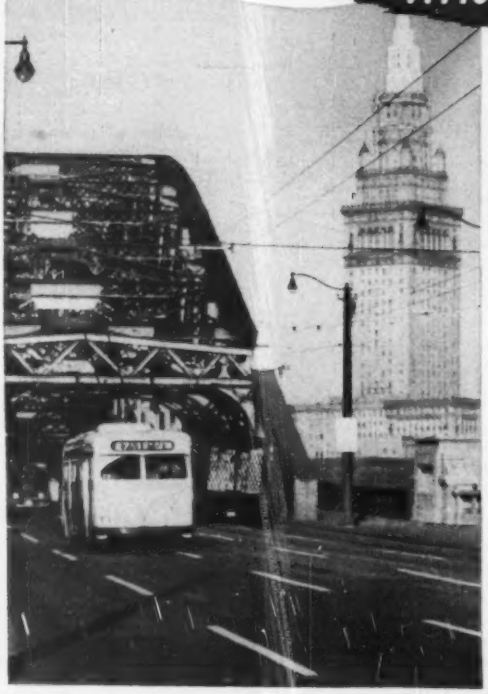
CLEVELAND plans 7 more TROLLEY COACH lines...

...to Serve with "Rapid Transit"



1951 promises to be *the* big year in Cleveland's transit history. Later in the year construction of the long-awaited East-West rapid transit line is scheduled to begin. It will cover 13 miles on a private right-of-way, giving Cleveland a facility for moving large numbers of passengers in and out of the downtown area from the suburbs and outlying parts of the city.

Sharing the transit spotlight in Cleveland Transit System's $22,200,000 modernization program is the expansion of trolley coach service. Already 329 of these efficient electric vehicles serve on 11 Cleveland lines. More than 200 additional coaches will be used on seven more lines scheduled for conversion.

In the *new* Cleveland Transit System, trolley coaches will operate mostly on main lines, parallel to the rapid transit line and in areas where the rapid transit is not accessible.

They have been selected for this vital role for two big reasons—their popularity with the public and their ability to earn profits. The May, 1950, CTS statement shows that every trolley coach line brought in a profit for the system.

A new rapid transit line—expanded trolley coach service. They form the basis for a successful transit future in Cleveland.

TROLLEY COACH AND STREETCAR LINE MATERIAL AND CAR EQUIPMENT

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News and Illustrations

Items of interest to city, town, and county officials, and others concerned with the economical construction and efficient operation of public improvement undertakings

F. W. Lovejoy to Address W.S.W.M.A. Meeting

Frank W. Lovejoy, marketing and sales executive of the Socony-Vacuum Oil Co., Inc., will be the featured speaker at the convention luncheon of the Water and Sewage Works Manufacturers Association.

F. W. Lovejoy

The luncheon will be held in connection with the A.W.W.A. annual meeting on May 2 in Miami, Fla.

The announcement was made by R. F. Orth, president of the W.S.W.M.A. located at 170 Broadway, New York 80, N. Y.

Mr. Orth reported that the session will begin with refreshments and entertainment at noon on May 2 in the Columbus Hotel's Peacock Promenade, followed by the luncheon and annual business meeting in the adjoining Biscayne Room.

Past president of the Sales Executives Club of New York, Mr. Lovejoy will discuss sales problems confronting water-works manufacturers today. His talk will be based on his wide experience in sales, marketing and his first-hand knowledge of the water-works industry.

New Ion Exchange Resin Rids Water of Sulfides

The Resinous Products Division of the Rohm & Haas Co., Washington Square, Philadelphia 5, Pa., reports that it has developed a practical and low-cost method of removing malodorous sulfides from industrial and domestic water supplies. The company points out that success of the method, which is readily adaptable to existing water softening equipment, stems from the strongly basic character of Amberlite IRA-410, newest in the firm's series of high-capacity anion exchange resins.

This exchanger removes the last traces of foul smelling sulfides, as well as sulfates, bicarbonates, and fluorides, using simple equipment no more complicated than the familiar water softener. If water hardness is high, softening and sulfide removal can be accomplished simultaneously and with no added cost for chemicals by using Amberlite IR-120, strongly acid cation exchanger, in the same unit with IRA-410.

This new Amberlite is an amine type, high capacity amion exchanger whose strong basicity permits adsorption of such weakly acidic constituents as H_2S. Its total exchange capacity of 25 kgr. (as $CaCO_3$) per cubic foot, it remains virtually unchanged over a pH range of 1 to 10. Reportedly possessed of excellent stability, IRA-410 is highly resistant to reagents such as acids, bases, reducing agents and organic solvents.

By combining Amberlite IRA-410 with Amberlite IR-120 (sodium form) in the same unit, calcium, magnesium and sulfides are removed, adding a softening treatment to the sulfide removal. Because both resins can be regenerated with NaCl or $NaHCO_3$, the combined operation involves no additional cost in chemicals.

Concrete Pressure Pipe Used for Water Lines

Four types of concrete pressure pipe for use in the construction of water transmission lines, water distribution systems, and pressure and gravity sewer mains, are manufactured by Gifford - Hill - American, Inc., Dallas, Texas. They are designed with ample safety factors to economically serve a wide and varied range of water services under operating pressure up to 300 pounds per square inch in sizes from 12 to 84 inches in diameter.

The four types are the Hume centrifugal concrete pressure pipe, American concrete cylinder, Lock Joint concrete prestressed cylinder, and Lock Joint concrete cylinder pipe.

The firm issues a booklet on its products, describing the pipe and special connections, outlets, bends, and reducers.

Exhibit on Operation of Waterworks and Sewage Disposal Systems

Aid in the operation of municipal water-works and sewage-disposal systems is stressed in a special panel, part of a graphic display in the new reception room of the Hagan Bldg., Pittsburgh 22, Pa. Sponsored by the Hagan Corp. and its subsidiaries, Hall Laboratories, Inc., and Calgon, Inc., the exhibit indicates the variety of fields served by those companies.

A natural color transparency of a municipal water plant is shown in connection with a description of the "threshold treatment," used by plants for corrosion control, lime-scale prevention, and stabilization of iron and manganese. The treatment utilizes minute quantities of the glassy phosphate, Calgon.

A miniature municipal waterworks and a sewage disposal plant are among the buildings in a "model city" in an activated diorama designed to acquaint visitors and new employees with the types of business and industry served by the 17 divisions of the Hagan firms. The display points out that 94 of the 100 largest companies in America are among those served by the Hagan group.

The "threshold treatment", used by plants for corrosion control, lime scale prevention, and stabilization of iron and manganese, is described in this scene, part of an exhibit on the operation of water-works and sewage-disposal systems.

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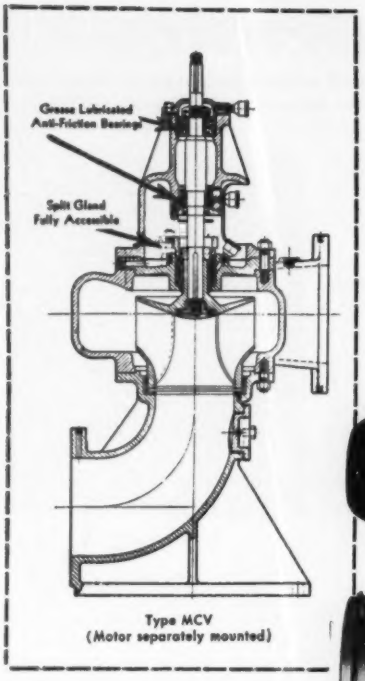

Type MCV
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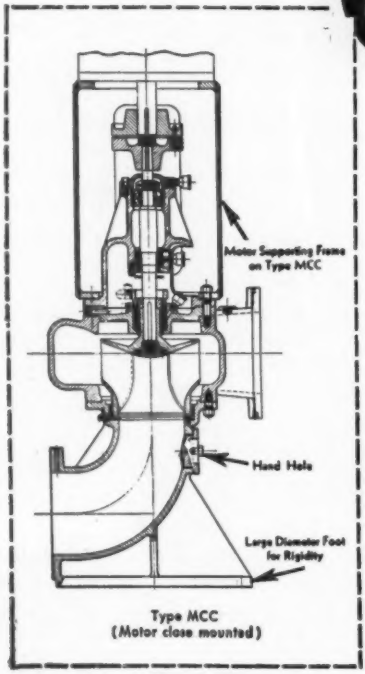
Mixflo, Type MCV
with base elbow suction nozzle



Type MCC
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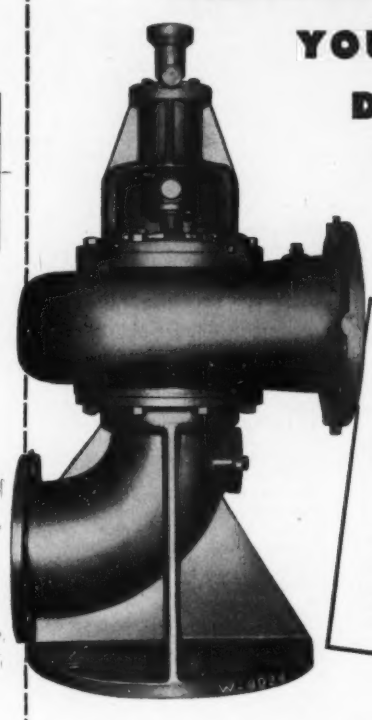
There's a Mixflo Pump

THAT WILL MEET YOUR SEWAGE DISPOSAL NEEDS— *Exactly!*



Worthington Offers The Largest Selection Of Sizes And Types In A Single Line

Non-clogging two-vane closed impellers, grease-lubricated anti-friction bearings, easy accessibility to the split stuffing-box gland and impeller eye . . . are typical of the many Worthington Mixflo features assuring low-cost, trouble-free sewage pumping.

No Need To Guess!

And along with performance-proved excellence in every mechanical and hydraulic detail, the Mixflo line offers you the widest choice of sizes and types in the field. So there's no need to compromise on a pump that's "about" right — you're sure to find a Mixflo that's *exactly right* for your particular requirements.

Bulletin W-317-B16 describes the various Mixflo types made in 10", 12" and 16" sizes. Worthington also builds Mixflos in sizes up to 84", with open or closed impellers and for horizontal or vertical drives. For more Mixflo facts that prove *there's more worth in Worthington*, contact our nearest District Office. Or write to *Worthington Pump and Machinery Corporation, Harrison, N. J.*

WORTHINGTON

WO.8

Civil Defense Radio Receiver

Neal F. Harmon, Civil Defense Coordinator for the General Electric Co., Electronics Dept., Syracuse, N. Y., discusses design features of the new G-E civil defense FM radio receiver with Charles Race, designer of the unit. Called the Civil Defender, the receiver can be used at headquarters of police agencies, fire departments, the Red Cross, and other groups. The unit can also automatically start and stop air-raid sirens.

The Handy Motor Scooter

Motor scooters have become so commonplace that some cities allocated parking meter spaces especially for these small light convenient vehicles. San Diego, Calif., is one of these cities, as described on page 17 of THE AMERICAN CITY for August 1949. Incidentally, San Diego's Street Department uses motor scooters for carrying street sweepings, tools, and compressed air for centerline striping, as described on page 82 of this magazine for January 1951, and in greater detail on page 116 of the October 1949 issue.

Motor scooter, owned by the City of San Diego, equipped with air compressor aids curb painting—one of many applications.

Cushman motor scooters are used by a number of Police Departments for checking and servicing the city's parking meters. How Wilmington, Del., collects coins from its 660 Duals is told on page 155 of the July 1947 issue.

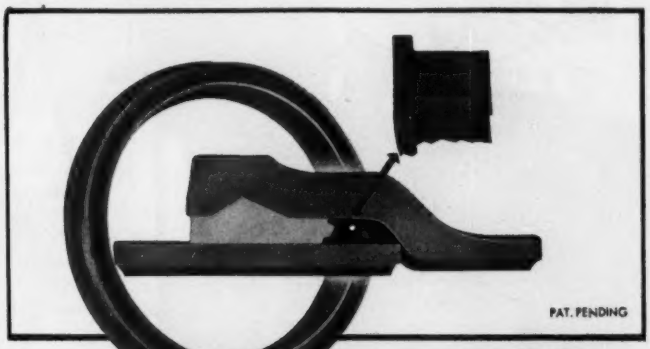
One of the methods by which "Manhasset Makes Work Easier", featured in THE AMERICAN CITY for March 1948, page 92, was by equipping meter readers for the Manhasset-Lakeville, N. Y., water district with handy Cushman motor scooters.

Handy is the word for the motor scooter. On the many light transportation jobs of municipalities, it carries enough, costs little to operate, parks and gets through traffic with least confusion. For specifications and literature, write Cushman Motor Works, Lincoln, Nebr.

Infilco Vice-President

The Board of Directors of Infilco Incorporated, 27 S. 12th Ave., Tucson, Ariz., at its March 19th meeting elected Lawrence K. Cecil, vice-president. Mr. Cecil has been general sales manager of the company since August 1950, and has been with Infilco for 25 years in the capacity of sales engineer and district manager. Prior to joining the firm, he was affiliated with the Oklahoma Medical School and the Oklahoma State Health Department. He is a graduate of the University of Illinois and an active member of the American Institute of Chemical Engineering and American Chemical Society. Mr. Cecil has contributed numerous articles to technical publications and has also designed equipment for which patents have been issued.

Infilco, Inc., which recently moved its headquarters to Tucson, was located in Chicago for over 50 years and is one of the nation's leading designers and manufacturers of water conditioning and waste and sewage treatment equipment.



Improved RING PACKING... assures pouring of dry joints... The Smith-Blair Water-Lock Ring does a real job of packing a bell and spigot cast-iron pipe joint! It is self-locking; it is self-adjusting to oversize bells; its sealing action automatically increases when pressure exists in the line. Made of molded rubber, it is non-porous and cannot be a culture-point for bacteria or any other contaminating element. It is installed quickly by simply rolling it back over the spigot. There is no cutting, fitting or chances for oversight; and its use actually saves on installation time. It is the only sealing ring hydrostatically designed to increase its sealing action automatically from pressure in the line. Effectively dams off water and assures pouring of dry joints.

Hydrostatically designed to hold 40-60 lb. pressure without compound.

Immediate Delivery!

Used with any joint compound. Saves time. Makes a better joint.

Stocked in principal cities. Write for name of your nearest Smith-Blair Distributor.

SIZES 4" through 48"

Packed 50 rings to a carton. Quantity prices based on full cartons.

also *BRONZE SERVICE CLAMPS
*STEEL & CAST IRON FLEXIBLE COUPLINGS
*FLEXIBLE REDUCING COUPLINGS

SMITH BLAIR INC.

SOUTH SAN FRANCISCO • CALIFORNIA

This pipe won't "SHRINK"!

—it's protected by BITUMASTIC 70-B ENAMEL

THE 36-inch steel pipe pictured here is part of a new water line being laid for a well-known midwest water works. This new pipe line is about 6,000 feet in length and is protected, inside and out, by Bitumastic® 70-B Enamel.

Inside the pipe, a glass-smooth lining of Bitumastic 70-B Enamel prevents rust, corrosion and tuberculation. This spun lining of durable enamel will *keep* flow capacity high, thus reducing pumping costs. And, with this kind of protection, there's no need to spend money for *oversized* pipe in order to allow for future "shrinkage."

On the outside of the pipe, Bitumastic 70-B Enamel prevents pitting and leakage caused by soil corrosion. Here, again, you save money by keeping maintenance and replacement costs low. In every way, it pays to protect *your* community's large-diameter pipe lines *inside* and *out* with Bitumastic Enamels.

KOPPERS BITUMASTIC ENAMELS
REG. U.S. PAT. OFF.

KOPPERS COMPANY, INC., Tar Products Division, Dept. 422T, Pittsburgh 19, Pa.

Named to Sales Staff

Grant C. Woodard has been named to the field sales and engineering staff of The Cooper-Bessemer Corp., Mount Vernon, Ohio. He will assist C. J. Michelson, who represents the firm in Michigan, Ohio, West Virginia, Kentucky, and Tennessee, under the direction of F. M. Devin, territorial manager and manager of Cooper-Bessemer's locomotive diesel engine division.

G. C. Woodard

Three New Partners

Walter L. Leach, Harry H. Moseley, and Jasper W. Avery have been admitted as partners in the firm of Havens and Emerson, consulting engineers, of 1140 Leader Bldg., Cleveland 14, Ohio, and 233 Broadway, New York 7, N. Y.

The company also reports the advancement of Frank Palocsay and Edward Ordway as principal engineers.

Telescopic, Single-Leg Derrick for Use on Trucks

A new telescopic, single-leg derrick, for ½, ¾, and 1-ton trucks, has been announced by the Powers-American Division, McCabe-Powers Auto Body Co., 5900 N. Broadway, St. Louis 15, Mo.

Designated the Uni-Lift, the unit is designed for use with multiple pulley blocks and has a maximum capacity of 1,500 pounds. For convenience in handling materials of different size, weight, and shape, the derrick base is keyed to permit positioning of the boom at two angles of elevation. The upper section of the boom may be telescoped for greater capacity when maximum height is not required.

A heavy-duty elevating spring raises the derrick semi-automatically. The Uni-Lift can be installed on a wide variety of truck bodies and is used for setting poles up to 35 feet in length.

The Uni-Lift telescopic, single-leg derrick mounted on a Powers-American Series 25 body truck can be installed on pick-up, express-type, or utility type truck bodies.

WATER COSTS go DOWN when you install CAISSON WELLS

A single 100" well like this supplies 2,000,000 gallons per day of clear, pure palatable low-cost water.

Here's the test . . .

LOW WATER COST! We can proudly state that, per gallon of water production, Caisson Wells are extremely economical, and in some cases the most economical water wells. Would you believe, that water can now be produced at a cost of less than 2 cents per thousand gallons, including pumping, operation, maintenance and amortization?

Let us prove it to you!

CAISSON WELLS can supply any city, big or small, with ample quantities of ground water—at a very small fraction of the cost of installing, purifying and maintaining a surface water supply!

GOOD WATER READY FOR CONSUMPTION! The water, which enters the well both laterally through the screen and upward from the open bottom, is perfectly clear and requires no additional expenditure for purification.

LIFELONG INSTALLATION! Durable materials—reinforced concrete for the well shaft and Everdur metal for the screen—as well as low screen velocities, insure an undiminished lifetime water production at little or no maintenance cost.

A competent Caisson engineer will gladly consult with you, checking your requirements and advising as to the site and size of the well or wells, the approximate production of water per well, and cost of installation.

Investigate this low-cost method of augmenting your water supply TODAY!

Here's the address: **CAISSON WELLS, INC.**
Ground Water Engineers and Contractors
33 W. 42nd Street, New York 18, N. Y.

IT'S DARLING'S NEW

B-50-B

Patent Pending

FIRE HYDRANT

...What a difference!

YES, what a *difference!* That's the word that's going around about the new and unique B-50-B—rated the most important advance in fire hydrant design in 50 years.

First, note that the B-50-B is *ball bearing* operated. Opening and closing takes less than half the usual wrench torque. *Smoother, faster, easier* operation every time!

Next, see how the B-50-B design uses "O" ring seals. No need for a stuffing box. It's a packless, *dry-top* hydrant. And it saves plenty of time and trouble! Does away with bothersome packing gland adjustment as well as the usual lubrication and maintenance of packing. Moreover, this "O" ring arrangement not only prevents the loss of thread and bearing lubricant, but never lets a drop of water reach the operating threads. Just add up *these* advantages!

As in any Darling hydrant, all inside working parts (main valve, main valve seat, drain valves and drain valve seats) can be removed through the top of the B-50-B for easy inspection and simplified maintenance. One 15-pound wrench does the trick, regardless of trench depth.

Before you decide on *any* hydrant, get *all* the facts on the Darling B-50-B.

Write for Bulletin No. 5007

DARLING VALVE & Manufacturing Co.

WILLIAMSPORT 10, PA.

No Mosquito is Immune To This New Insecticide

No mosquito is immune to Tossits, the new formula consisting of a combination of newer insecticides, for these water soluble capsules kill 100% of all species of mosquito larvae. New packaging for convenience are the 50 Tossits in a plastic bag, 5 bags to a sealed tin pail, and 4 pails per fibre board carton containing 1,000 capsules. According to the manufacturer, Sentco, Inc., (formerly Southern Entomological Co.) 2400 Tamarind Ave., W. Palm Beach, Fla., this new packaging will keep Tossits in perfect condition under extreme atmospheres of heat and moisture.

The firm claims that its product kills mosquitoes 20 times faster than hand spraying, for it contains special spreading ingredients which quickly distribute the insecticide over large areas of water surface.

However, the company points out that these capsules are not expected to replace those machines required for adult mosquito control and large areas economically reached by power equipment. Mosquito control units carry Tossits on each vehicle to kill the insects in small areas or in breeding places difficult to reach.

High-Intensity Warning Signal

A new high-intensity warning blinker with 360-degree visibility is receiving unusual acceptance among municipal officials, according to the manufacturer, The Griffin Lamp Co., Hamilton, Ohio.

Emergency warning blinker

This big emergency roof-mounted blinker is in use on fire, police, ambulance, state, and county highway vehicles, as well as city utility trucks. The 360-degree airport lens in red, amber, or blue, is visible around the horizon, in daylight or darkness. Its special light pattern is a perpendicular shaft of one-inch width, high intensity, constant focal point increasing with distance.

The kit includes complete assembly, 50 candlepower double contact bulbs, low-loss ground, dual conductor cable, Tung Sol flasher, and mounting pad.

Field Representatives

Joseph B. Doran and William E. Morrison have joined the Ohio Brass Co., Mansfield, Ohio, as district managers in the eastern territory. They will have their headquarters in the New York office.

Before joining Ohio Brass, Mr. Doran served with the International General Electric Co., as machinery department manager for western Venezuela.

Mr. Morrison had been with the Westinghouse Electric International Co. as regional supervisor in Santiago, Chile.

The Ohio Brass Co. manufactures trolley coach and street car line material, and car equipment.

W. E. Morrison **J. B. Doran**

You can add years of life to your equipment with PITT CHEM Protective Coatings

In these busy days . . . when new equipment is hard to get . . . you'll want to make your *present* equipment *last* as long as possible—*produce* as much as possible. That's where Pitt Chem Protective Coatings fit into your picture. They guard equipment with a tough, impervious film that protects surfaces against practically all types of industrial corrosion and contamination.

Laboratory-controlled from raw materials to finished product, Pitt Chem Protective Coatings are completely uniform and dependable. • For more information, write today for new booklet, "Control Corrosion Through Pitt Chem Protective Coatings."

See Your Nearest Pitt Chem Man

PITT CHEM
Industry's Most Comprehensive Family of Protective Coatings

★ Hot Applied Tar Base Coatings
★ Cold Applied Tar Base Coatings
★ Alkyd Base Coatings
★ Chlorinated Rubber Base Coatings
★ Vinyl Base Coatings
★ Phenolic Base Coatings

WAD 3547 **PROTECTIVE COATINGS DIVISION**

PITTSBURGH COKE & CHEMICAL CO.
GRANT BUILDING • PITTSBURGH 19 PA

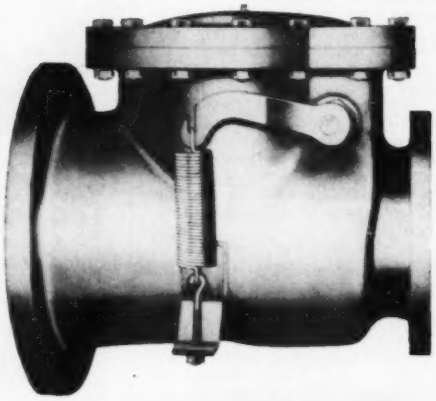
OFFICES: New York • Chicago • St. Louis • Tulsa • Houston • Los Angeles • San Francisco

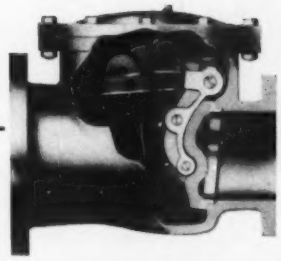
Bad in a door—worse in a Valve

RENSSELAER CHECK VALVES

Seat without SLAM

THERE'S always possibility of serious SLAM trouble on pump shut down, especially where gradient is steep or where pumps are manifolded and shut down individually. Rensselaer check valves solve this problem, END this trouble—yet their construction is simple, and head loss comparatively low. Their lever-and-adjustable-spring-construction eliminates SLAM by seating the gate at the same instant the water column in the discharge line comes to rest. These valves are ideal for pumping plants; water, oil, gasoline; chemical and process industries; marine service, drydocks; fire protection systems. For complete data, see new Catalog H.





LEADERSHIP FOR OVER 65 YEARS

RENSSELAER VALVE COMPANY

Hydrants • Gate Valves • Square Bottom Valves
Check Valves • Tapping Sleeves and Valves • Air Release Valves

TROY, NEW YORK

Division of Neptune Meter Company

Atlanta, Bala-Cynwyd, Pa., Chicago, Denver, Haverhill, Mass., Kansas City, Los Angeles, Memphis, Oklahoma City, Pittsburgh, San Francisco, Seattle, Waco.

See ***Heavy Stainless Steel Main Hinge Shaft...Heavy Solid Bronze Gate Hinge...Stainless Steel Key ...Dual Stainless Steel Gate Pins...Rugged Cast Iron Bronze Mounted Gate. See your Rensselaer Representative for seasoned advice on all our products.***

Smoothing Iron Used For Road Maintenance

Surfa-slick, a self-contained asphalt smoothing iron made by the J. E. Woods Mfg. Co., 1516 First St., San Fernando, Calif., is priced at $79.50 f.o.b. San Fernando, Calif, and not at $59.50, as reported in the March issue. This machine is designed and engineered to provide constant regulated heat all day for hand-smoothing and sealing of asphalt surfaces.

J. E. Woods, president of the firm, has announced the appointment of the Edward R. Bacon Co., 17th and Folsom Sts., San Francisco, as distributors for northern California and western Nevada. The Bacon concern has five business locations: San Francisco, Sacramento, Oakland, Stockton, and Fresno. It handles a complete line of construction equipment.

Graybar Appointments

S. W. Scott has been named Pacific district manager for the Graybar Electric Co., 420 Lexington Ave., New York 17, N. Y., according to A. H. Nicoll, company president. Mr. Scott will have his headquarters in Los Angeles.

G. T. Marchmont, southwestern and gulf coast district manager, reports the appointment of L. J. Olivier as manager of the New Orleans branch house.

Mr. Scott succeeds H. L. Harper, who retires in April after heading the Pacific territory for 19 years. Mr. Harper will serve in an advisory capacity until his retirement.

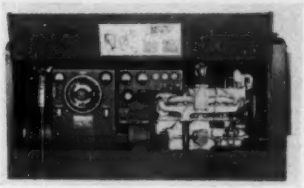
Mr. Scott will supervise the Pacific district which includes, besides the Los Angeles area, branches at Phoenix, Arizona, and San Diego and Long Beach, Calif.

Distributing, Spraying Unit For Bituminous Streets

More pay loads per day is claimed for the new Bros Bituminizer and Spraymatic bar manufactured by the Wm. Bros Boiler and Mfg. Co., Minneapolis 14, Minn. The Bituminizer is designed with a lower center of gravity and with an overall weight distribution to meet the truck manufacturers' distribution requirements which make it possible to handle more payloads, and obtain longer truck life. Among its features are: a V-bottom rectangular tank for better weight distribution; diamond shaped flue for extra large heating area, and gear type pump for long life and accurate metering.

The Spraymatic bar fits most distributors. Fully circulating and non-clogging, it assures a straight, sharp starting and cut-off line. The ring packed non-leaking 45-degree swing joints, are a Bros design feature of this device. Their 45-degree pivotal action permits end sections to swing back and up if an obstruction is hit.

Portable Maintenance Welder



A special 300-amp. gasoline engine driven arc welder with a 3-kw auxiliary power generator, popular as a heavy-duty field repair and maintenance unit, is announced by the Hobart Brothers Co., Troy, Ohio. It is a self-contained unit powered by a 6-cylinder self-starting Chrysler engine directly connected to the welding generator and mounted on a welded steel frame. The electric generator provides for lights and such tools as a lathe, grinders, drills, brake reliner, valve refacer, chipping hammers, power wrenches, and paint sprayers. The unit is completely enclosed by a sheet metal canopy with hinged side doors providing access to the control panels, the engine, the welding generator and other parts within the canopy.

"Guardians of the SUSQUEHANNA"

PEERLESS PUMPS

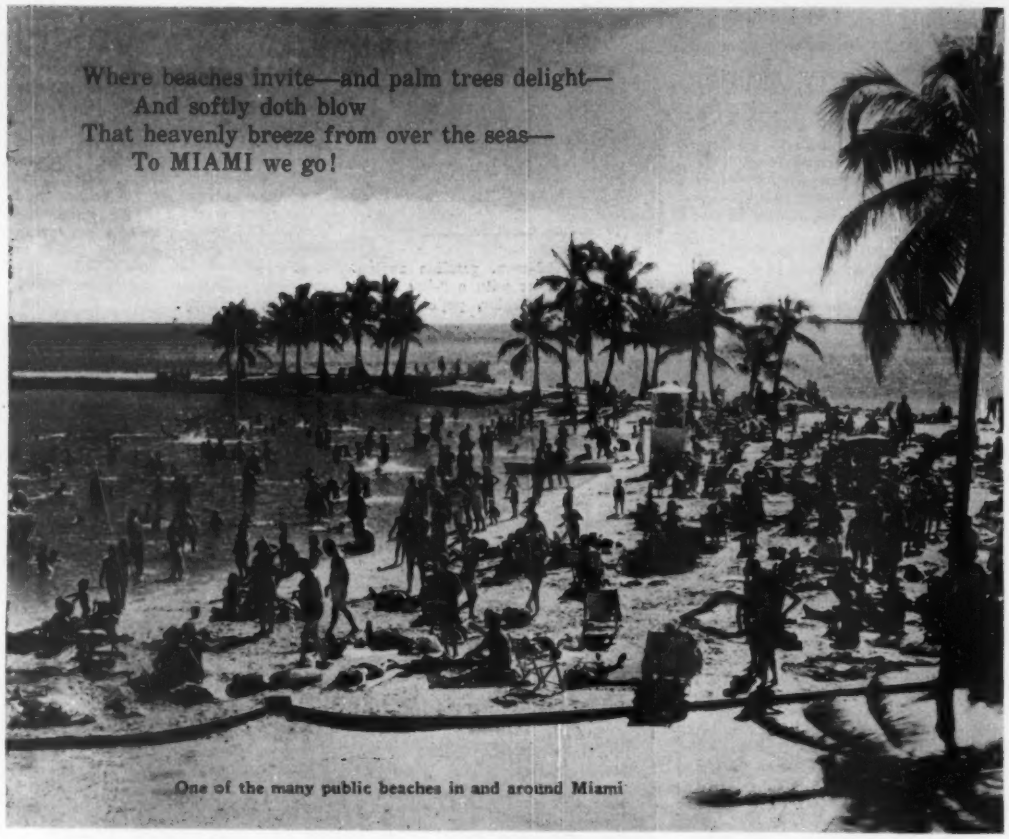
PEERLESS PUMPS *preferred*

ON THE WILLIAMSPORT FLOOD CONTROL PROJECT

2 of 5 Peerless Hydro-Foil pumps installed on the Williamsport Flood Control Project. Inset shows Reagan St. pumping station, 1 of 2 stations serving the project.

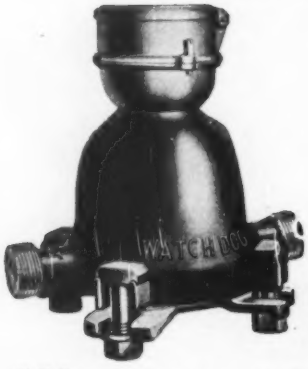
Peerless Hydro-Foil pumps, such as those shown above, provide capacities ranging up to 220,000 gpm against low and medium heads from 2 to 60 feet. These multi-purpose pumps are in service on hundreds of jobs similar to the Williamsport Flood Control Project, controlling storm and flood water, handling drainage and canal diversion water, as well as disposing of municipal and industrial effluent and wastes. A 24 page Bulletin B-148-1 describes their design, construction and application. Write for your copy today.

PEERLESS PUMP DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION
Address Inquiries to Factories at:
Los Angeles 31, California or Indianapolis 8, Indiana.
Offices: New York, Atlanta, Fresno, Los Angeles, Chicago, St. Louis, Phoenix; Dallas, Plainview and Lubbock, Texas; Albuquerque, New Mexico.



One of the many public beaches in and around Miami

At the MIAMI Convention of the American Water Works Association



Watch for the "Watch Dog" Meter

LIQUID METERS

All Sizes *All Types*

WORTHINGTON-GAMON METER DIVISION

Worthington Pump and Machinery Corporation

296 South Street **Newark 5, N. J.**

Firm's Administrative Changes

L. H. Moulton D. T. Miller

S. B. Van Dyne D. T. Buist

S. G. Thornbury, president of Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif., reports the retirement of Lou H. Moulton, vice-president and national sales director. Mr. Moulton is succeeded by Dan T. Buist as national sales director.

Mr. Moulton joined Turco in 1931 and had been service engineer, district sales manager, and eastern division manager. Mr. Buist joined the firm in 1936 after 20 years' experience in the automotive field.

In keeping with Turco's production expansion, which includes new factories in Illinois and New Jersey, Mr. Buist has named Stewart B. Van Dyne as administrative assistant, and Dan T. Miller as coordinator of sales.

Temperamental Weather Creates Need of First Aid For Nation's Shade Trees

Because winter injury is the worst in many years, the country's shade and ornamental trees will need more first aid this growing season than normally.

Such is the prediction of Homer L. Jacobs, research director of The Davey Tree Expert Co., Kent, Ohio, who said nothing much can be done about repairing the damage now, because full ravages won't be readily discernible until the spring. Tree feeding is essential to restoring growing vitality, he says, but advises that pruning dead and dying branches should be done when leaf growth is well under way.

To minimize damage, the arboreal authority advises complete sanitation-removal and destruction of dead wood, feeding and repair. According to Mr. Jacobs, more than the usual borer trouble can be expected this summer. Abnormally hot then cold weather creates much tree injury of a type liked by borers for breeding.

SIMPLEX TYPE H VENTURI METER

The Simplex Type H meter is designed specifically for use with Venturi Tubes, Flow Nozzles or Orifice Plates. It measures, with a high degree of accuracy, hot or cold water, process liquors or gases, under high or low pressure conditions. When used with appropriately designed Venturi Tubes, measurement of sewage or sludge may be accomplished with equal accuracy and ease.

This meter is built with maximum differentials of 114" or 64" of water to measure over ranges of 13 to 1 and 10 to 1 respectively. Standard design includes indicating, recording and totalizing features but, if desired, it may be furnished with various combinations of these elements.

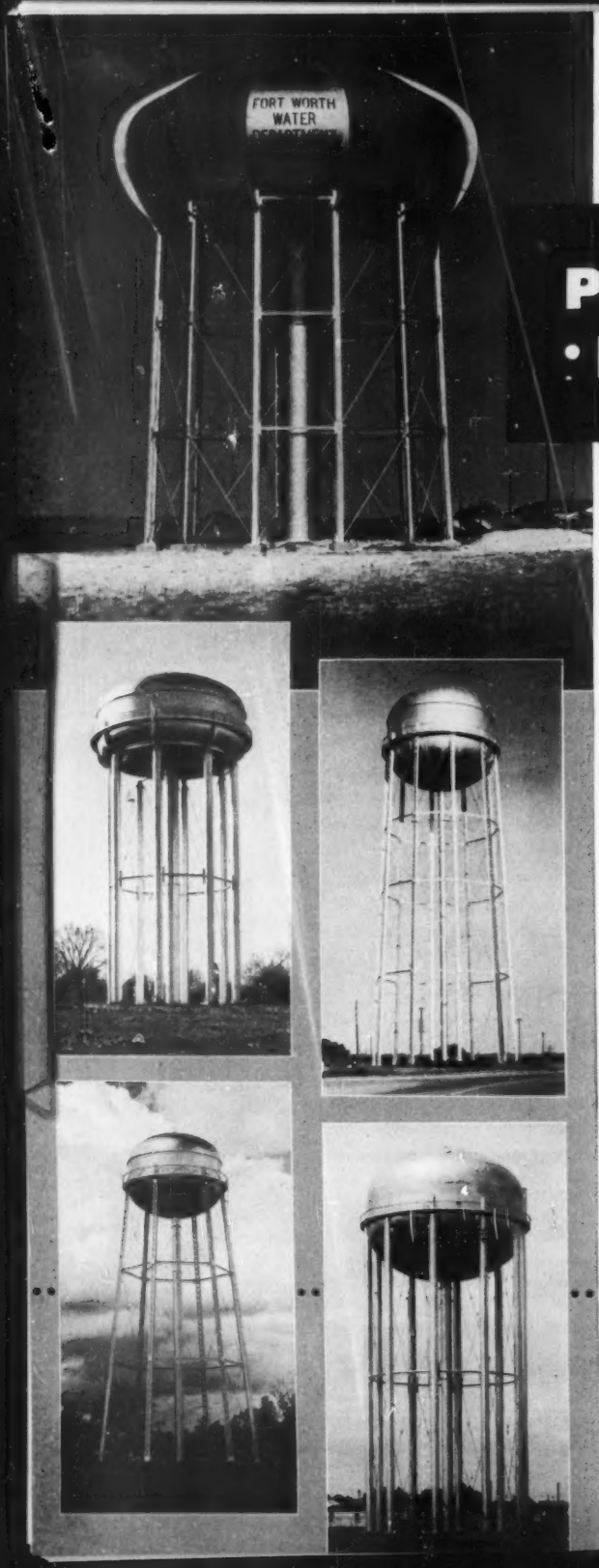
Versatility of installation is attained through its various forms of mountings and its adaptability to different pressure conditions, particularly those of low pressure.

This instrument is one which may be recommended without hesitation whenever accuracy and long range of measurement are required.

Write for Bulletin No. 401 to Simplex Valve & Meter Company, Dept. 4, 6789 Upland Street, Phila. 42, Pa.

SIMPLEX

VALVE AND METER COMPANY



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Stands for

BETTER WATER SERVICE *with* ELEVATED STEEL TANKS

Ample supply for peak demands—dependable, uniform pressures—reserve capacity for fire protection and pump interruptions . . . these and every other feature of desirable water service are gained through the right Pittsburgh-Des Moines Elevated Steel Tank for specific community needs. Determination of correct tank type and size is simplified by a consultation with experienced P-DM engineers. *Let us cooperate!*

PITTSBURGH • DES MOINES STEEL CO.

Plants at PITTSBURGH, DES MOINES and SANTA CLARA

Sales Offices at:

PITTSBURGH (25). . . . 3412 Neville Island
NEW YORK (7). . Room 915, 270 Broadway
CHICAGO (3), 1216 First National Bank Bldg.
DES MOINES (8). . . . . 913 Tuttle Street
DALLAS (1). . . . 1217 Praetorian Building
SEATTLE . . . . . 920 Lane Street
SANTA CLARA, CAL. . . 619 Alviso Road

Tractor-Loader Has Hydraulic Torque Converter Drive

A selection of four forward and four reverse speed ranges is featured in this new wheel tractor-loader.

A new wheel tractor-loader, featuring a hydaulic torque converter drive and an entirely new design clutch-type transmission, is manufactured by the Tractomotive Corp., Deerfield, Ill. The Tracto-Loader is sold through Allis-Chalmers Industrial tractor dealers.

Called the TL-10 Tracto-Loader, it has a single stage torque converter which furnishes a smooth, constant flow of power to the drive wheels. The manufacturer states that there is practically no spinning of wheels while loading, and crowding action is definitely improved.

The new clutch-type transmission eliminates most gear shifting. Two multiple-disc clutches are built into the transmission, one for forward speeds, the other for reverse.

Mounted on rubber tires, the TL-10 has a ¾-cubic yard, hydraulically controlled bucket and weighs 10,650 pounds. Power is furnished by an Allis-Chalmers 40.5 brake hp gasoline engine.

Diatomite Water Filters Adapted to Municipal Supplies

The new, horizontal plate diatomite water filter made by the Sparkler Mfg. Co., Mundelein, Ill., has been designed so that it can meet the requirements of water treatment in public water supply as well as special industrial applications, according to D. D. Baldwin, sales manager, water filter division of this company.

The filters are designed to have a high dirt capacity. The plates are constructed so that a deep cake of diatomite and dirt can be built up to permit long runs between cleaning and get the maximum value in gallons of water from a pound of diatomite. In addition, the design permits ready removal of the expended material and a fresh cycle started with minimum of effort and time and use of wash water.

The design also permits the use of low operating pressures. The head loss through the filter at even a 4-gallon rate per square foot is about two pounds.

The company has a new pamphlet ready for distribution describing the filter. It requests that, when you write, you ask for literature describing the Sparkler Model SC filter.

Sewage Pumping: Two Methods

Designers can either use non-clog centrifugal pumps or pneumatic ejectors to meet their sewage pumping problem, according to the Yeomans Brothers Co., 1455 N. Dayton St., Chicago 22, Ill.

Yeomans vertical non-clog centrifugal pumps, designed in sizes from 3 to 24 inches, are able to pass solids up to 12 inches in diameter, the company asserts, and to meet a range of capacities of 50 to 24,000 gallons per minute, pumping against heads of 130 feet.

The Shone ejector, also made by Yeomans Brothers, operates in ranges too small for the pumps listed above. When the centrifugal unit is too small, it frequently is unable to pass the large solids found in the sewage. The Shone ejector has a minimum size of four inches. It has no screens, no airtight metal floats, no float switches, or shafting bearings. It operates from air supplied by air compressors and is manufactured in capacities from 30 to 1,000 gpm.

YOUR EXPENSIVE OFFICE MACHINE IS SAFE ON A "NON-CAPSIZABLE" OFFICE MACHINE STAND

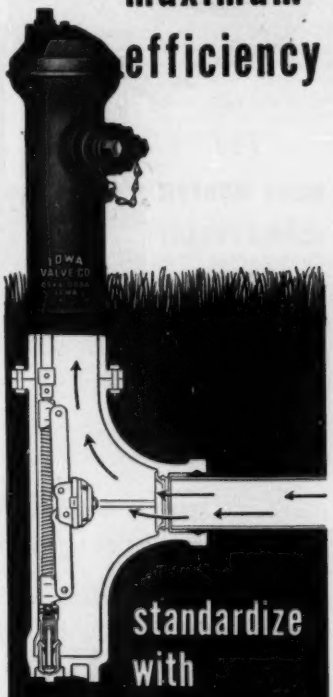
Tusco

TUSCO STANDS ARE ADAPTABLE TO OVER 95% OF ALL OFFICE MACHINES

Tusco Stands provide a combination of strength, stability, operator comfort and beauty available in no other office machine stand. Equipped with an adjustable ball foot the TUSCO Stand provides solid support for the heaviest, most active machines on the most uneven floors.

TUBULAR SPECIALTY MFG. CO.
1940 Stanley Ave. Detroit 8, Mich.
ESTABLISHED 1921

for maximum efficiency



standardize with IOWA hydrants

Two piece operating nut with special adjustment screw solves the problems of expansion and contraction . . . makes Iowa hydrants easy to operate at all times.

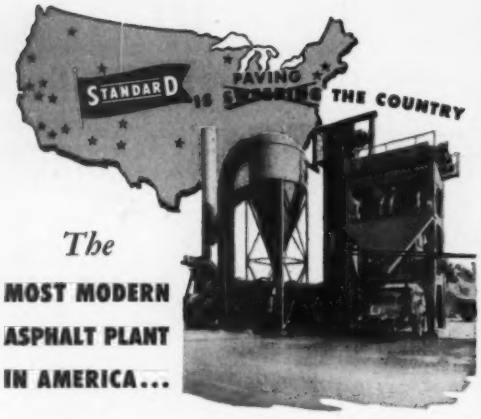
Positive operating mechanical drain valve can be removed along with all other working parts through top of hydrant without special tools.

Fixed position of valve arms makes leaking impossible should standpipe be broken.

Unrestricted water flow gives full pressure at extreme low loss of head.

Built to conform to the latest A.W.W.A. specifications.

IOWA VALVE COMPANY
281-299 N. Talman Avenue • Chicago 80, Illinois
A subsidiary of James B. Clow & Sons



The
MOST MODERN ASPHALT PLANT IN AMERICA...

From California to New Jersey the new Standard Asphalt Plant is being hailed as the acme of modern design—tops for rugged dependability, yet most economical to own and operate.

Unit built. 8 sizes—500 to 6000 pound batch capacities. *Manual or fully automatic weighing.* Prompt delivery.

Write *TODAY*, for full descriptive catalog.

STANDARD STEEL CORPORATION

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CUT ESTIMATING TIME with ROLATAPE

The NEW, QUICK Way to Measure Distances

- **Measures as it rolls**
- **One-hand operation**
- **Accurately calibrated**

ROLATAPE accurately measures and records as you wheel it over distances to be measured. Model 200 illustrated, records up to 100 feet, repeats cycle after ringing bell. Clearly audible, click every two feet permits running count.

Measures wall to wall, vertical, overhead and curved surfaces easily and accurately. Rugged steel construction withstands hard field usage. Easy to carry, weighs only 2¾ lbs.

ROLATAPE pays for itself in a short time. Speeds up all kinds of estimating and layout work. No extra man needed to help with measurements. Order today to assure prompt delivery. Full satisfaction guaranteed, or money promptly refunded if returned within 10 days.

ROLATAPE handle extends 34", yet folds compactly. Wheel is 7⅝" in diameter. Other models available for longer distances, rough terrain.

Only $17.50

Order direct from:

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2300→ IDAHO

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"FERRO" signs are nationally known, tested, *proved*. Finest quality steel, deeply embossed, finished in brilliant, permanent porcelain enamel.

If you have allied lines and a following, write today for further information.

FERRO ENAMELING CO.

1100—57th Avenue Oakland 3, Calif.

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured No Large Bell-holes to Dig
Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each. Leadite tested and used for over 50 years ● Leadite joints improve with age.

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY

Girard Trust Co. Bldg., Philadelphia 2, Pa.

No Caulking

AEROIL HEET-MASTER 230, 330 AND 500 GAL. KETTLES FOR ROAD REPAIR BUILDING. SAVE 50% ON FUEL AND TIME

The famous HEET-MASTER Kettle, that does the work of two bottom fired kettles, is available in the larger size for big repair and paving jobs. (Ask for Bulletin No. 400RN).

Other Free Bulletins you'll want to have on file: Nos. 171, Asphalt Surface Heaters & Paving Tool Heaters; 502, Aeroil 400 to 600-gal. Utility Trailer Sprayers; 397Y, All-Steel Tool Boxes; 637, Cut Back & Emulsion Sprayers; 174, Burners & Torches. All AEROIL Products are guaranteed for a full year against defects in workmanship and materials. Experience of over 33 years assures you of the finest and most economical equipment.

AEROIL PRODUCTS COMPANY, INC.

5 Wesley St. South Hackensack, N. J.

Fire Fighting Trailers

Fire fighting trailer, Model PR82250, is a miniature self-contained Fire Department, according to the manufacturer, the Preakness Engrg. Co., 972 Broad St., Newark 2, N. J. It carries 200 gallons of water and the water tank is welded on to the chassis to form a single rigidly constructed unit.

The portable pump is connected to the water tank and fire hose, and can be detached and easily carried to any water supply. Maneuverability is provided by the ball bearings, pneumatic tires, and leaf type springs. Gasoline driven by a four-cycle, 4-hp engine, the firm's fire fighting trailers are employed for civilian defense as well as for military, farm, and flood usage.

Other models available are PR9550, fitted with a centrifugal pump rated 140 gpm at 100 psi, and Model 450 which has a 500 gpm centrifugal pump with a 4-inch suction and two 2½-inch discharge outlets.

Any Preakness model may be skid-mounted in lieu of trailer mounted.

Specifications Are Given For Service Weight Soil Pipe

The Technical Committee of the Cast Iron Soil Pipe Institute, Heurich Bldg., 1627 K St., N. W., Washington, D. C., has decided upon specifications for a product to be known as service weight soil pipe, which will ultimately supersede the present victory weight pipe.

These specifications are the result of a study made at the request of the National Association of Master Plumbers to bring about industry-wide standardization of soil pipe, so that dimensions critical to laying-out and construction will be uniform.

Service weight soil pipe, in all probability, will be available from all soil pipe producers in a reasonably short time, depending upon the ability to procure needed manpower and materials for the changing of production equipment now in use.

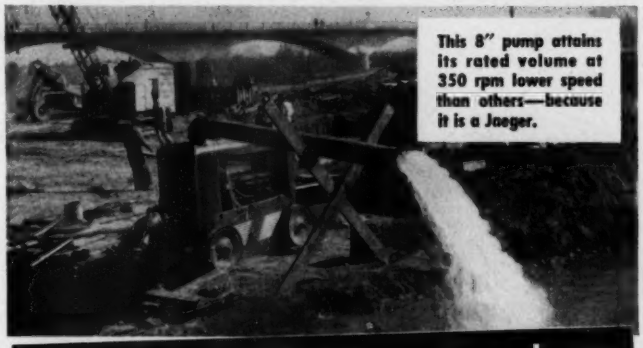
Meanwhile, victory weight pipe will be applied to requisitions on hand, to the extent of producers' abilities, and it is thought advisable to point out that as and when service weight pipe is available, the same will be interchangeable and may be used successfully with victory weight pipe and fittings which are in the stocks of distributors and contractors at that time.

SALES ENGINEER WANTED

To represent a well established fire hydrant and gate valve manufacturer, in the States of New York and New Jersey. Must be experienced or have water utility operating experience. Permanent position—salary and bonus. Interview arranged on basis of letter stating education, experience, availability, salary desired, and other pertinent personal information. If possible, enclose recent photograph and references. Replies held in confidence.

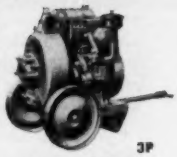
Box ‡342
THE AMERICAN CITY
470 Fourth Avenue
New York 16, N. Y.

2100 gallons every 1150 revolutions



JAEGER pumps pull stronger, pump longer

Because Jaeger dewatering pumps are built oversize, to produce full rated volume at easier speeds, they also hold more priming water and are subject to less abrasive wear. Combined with double priming action and positively lubricated seal (Jaeger patents) they insure fast, sure priming without vapor lock on the toughest pulls, sustained efficiency on non-stop pumping, and thousands of extra hours of service from both pumps and engines.



3P
Others 1½" to 10"

See your Jaeger distributor or send for Catalog P-10.

THE JAEGER MACHINE CO. 505 Dublin Ave., Columbus 16, Ohio

COMPRESSORS • MIXERS • HOISTS • TOWERS • PAVING MACHINERY

American Vacuum Leaf Loader
Solves your leaf or clean-up problem

Write for leaflet
LEAF LOADER DIVISION
American Structural Steel and Tank Co.
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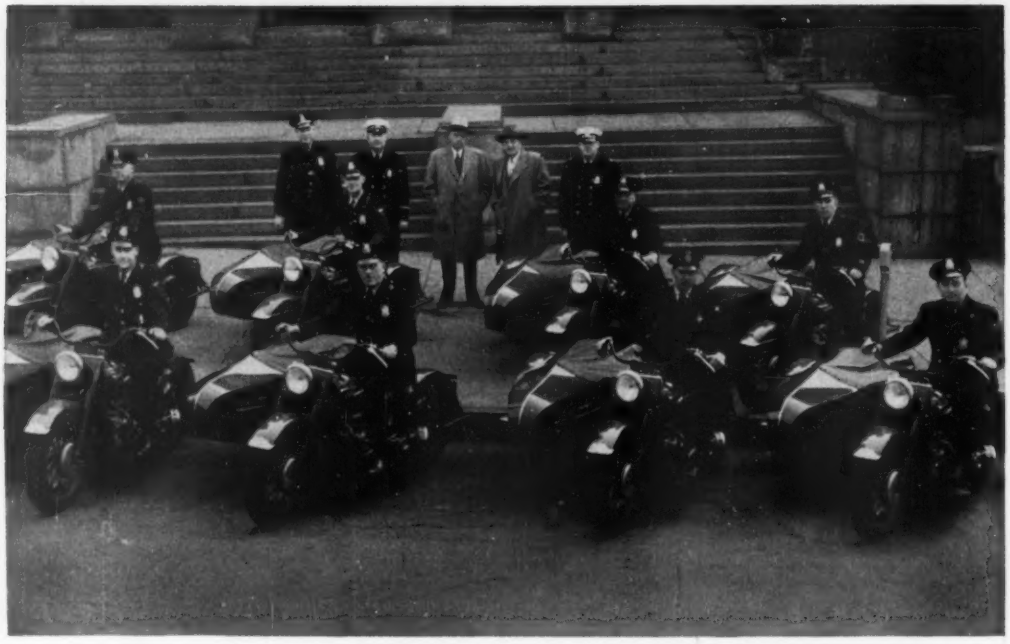
Scranton, too, equips with Latest Harley-Davidsons!



Standing, left to right: Sgt. Walter Hoffman; Capt. Richard Beynon; Mayor James T. Hanlon; Director of Public Safety, William Lonsdorf; Capt. James Conaboy.

TRAFFIC! TRAFFIC! Traffic everywhere growing by leaps and bounds! In Scranton, Pa., busy heart of the anthracite coal mining region, police resources recently were strained to the utmost to maintain adequate control. To relieve the situation, Mayor James T. Hanlon and Public Safety Director William Lonsdorf took a logical step. They ordered a fleet of eight 1951 Harley-Davidsons with sidecars . . . and "the situation is now well in hand"! The machines are on daily duty helping Scranton's traffic squad enforce its program of traffic control and accident prevention.

Your city, likewise, can benefit from the use of Harley-Davidsons. These big, powerful motorcycles are built especially for police work. Easy handling, quick pickup, road-hugging stability, oil-cushioned riding ease, effortless steering, 2-way radio and other features help the mounted officer do his duty more efficiently. Ask your dealer to call on you with complete information about the latest model Harley-Davidson Police Motorcycles, Servi-Cars and Sidecars, or write

HARLEY-DAVIDSON MOTOR COMPANY, Milwaukee 1, Wisconsin

HARLEY-DAVIDSON

MOTORCYCLES POLICE BETTER TRAFFIC CONTROL **SERVI-CARS**

Heads Water Treatment Unit

The Cochrane Corp., 3130 17th St., Philadelphia 32, Pa., reports the appointment of S. B. Applebaum as manager of its water treatment division. He was founder and is vice-president of the Liquid Conditioning Corp., now a subsidiary of Cochrane.

S. B. Applebaum

A water specialist for 35 years, Mr. Applebaum has managed the water treatment division's cold process section.

The company manufactures water conditioning equipment and steam specialities.

Electrically Operated Pump Increases Water Supply

A daily increase of 20,000,000 gallons of water has been made possible through the use of an electrically driven booster pump at Phoenix, Ariz., General Electric engineers said.

A booster station employs an 800-horsepower General Electric motor to drive the pump. A five-hp. G-E motor operates a valve which connects the pump to a 48-inch main.

Cost of the city's installation is about $70,000—a fraction of the estimated $400,000 cost of a new pipeline with the same capacity, according to R. Gail Baker, City Engineer of Phoenix.

Because of the large increase in the number of water customers during the past year, Mr. Baker pointed out, the booster station was needed to step up the city's daily capacity of water lines from Phoenix supply source on the Verde River. He added that the total number of Phoenix water customers has jumped more than 11,000 in the past year.

The pump has a peak capacity of 50,000 gallons per minute, or 72,000,000 gallons per day. Mr. Baker said that the pipeline's capacity could be increased only by 20,000,000 gallons per day.

This booster pump at Phoenix is powered by an 800-hp G.E. motor.

On mile after mile of Chicago streets it's AMPLEX STREET LIGHTING LAMPS!

FAR SUPERIOR LIGHTING! Dollar savings never before obtained! That's why more and more American municipalities and public utilities are adopting Amplex Street Lighting Lamps. These lamps are specially designed and built to resist the incessant shocks and jars of traffic . . . to retain the highest degree of light output during the whole of their long-burning life.

Amplex Street Lighting Lamps are made in the most complete line ever marketed . . . give you the right type and wattage for every purpose. And rapidly winning today's leadership are Amplex Weatherproof Lamps formed of "hard glass". Records prove that Weatherproofs virtually abolish failures that are caused by climatic conditions . . . establish completely new standards of dependability and service economy.

For full facts about Amplex Street Lighting Lamps and their outstanding performance, contact Amplex Corporation, Dept. K-4, 111 Water Street, Brooklyn 1, New York.

AMPLEX

Sealed-Beam Reflector Lamps, Colorbeam Lamps, Spotlites and Floodlites, Industrial Infra-Red Heat Lamps, Vibration and Rough Service Lamps, Street Lighting Lamps, Traffic Signal Lamps, Incandescent Lamps, Fluorescent Tubes, Display Accessories.

CUT DIGGING COSTS

with the

new Sherman Power Digger

Patented, actuated bucket gives you selective digging action, better loading, greater versatility.

All-hydraulic action—made possible by heavy-duty hydraulic cylinders—assures efficient performance.

SPECIFICATIONS

Shovel reach below ground surface	8 feet
Digger reach behind tractor	10 feet
Swinging arc	140°
Trench width, standard digging shovel, single cut	18 inches
Digging shovel capacity	3.5 cu. feet
Loading shovel capacity	5 cu. feet
Loading clearance, digging shovel, loaded	7 feet
Loading clearance, loading shovel	10 feet

Standard tractor mounting gives unmatched maneuverability and transportability.

•

Digs ditches, trenches, footings, culverts, basements and other excavations.

•

Handles roots, rocks, hard clay and oiled road surfaces.

Works well behind the tractor at any angle.

•

Actuated bucket raises high enough to load standard dump truck.

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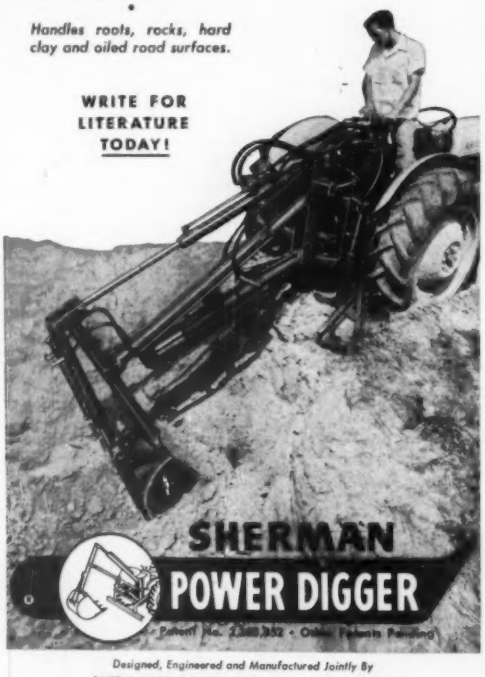

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STREET, SAFETY, PARKING LINES $97.50

F.O.B. Detroit

Efficiently Made at Walking Speed!

Communities from coast to coast are drastically cutting the maintenance costs of traffic and parking lines with FLORLINE. Often pays for itself on the first job! Note these exclusive Florline advantages:

1 man, 1 hand operation. No attachments. Gravity feed.

Makes curved, straight, continuous or skip lines . . . 2, 3 or 4 inches wide with interchangeable carriages.

Holds 1½ gals. paint, lacquer, whitewash. Cannot spill. Portable, efficient, speedy. Pays for itself quickly. Easy to clean, transport and store. FULLY GUARANTEED.

Write today for folder and list of users. Dept. MB.

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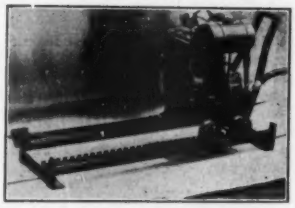
12083 Woodbine Ave. **Detroit 28, Michigan**

6 *Reasons why* WATERWORKS MEN *prefer* EARTHWORM

1. Boring hole (not pushing) assures accuracy.
2. Fast—will bore hole for average service in 8 to 20 minutes. Bores 1½" to 5" hole.
3. MINIMUM street opening —saves digging.
4. One or two-man operation.
5. Safe — manual feed warns of existing lines.
6. A complete portable equipment—no auxiliary equipment required.



EARTHWORM

Used for over a decade by progressive utility companies, municipalities and contractors for laying electrical conduits, water and gas pipe.

REDUCE COSTS AND INSTALLING TIME 50-90%

Only EARTHWORM Has All of These Features

Write now for full information and operating instructions

Present Stocks Allow Immediate Delivery

LUBE JACK COMPANY

1415 14th Street **Santa Monica, Calif.**

Joins Engineering Firm

A. Wilson Knecht, mechanical engineer, has been admitted to the firm of Seelye, Stevenson & Value, civil, industrial, structural and sanitary engineers, with offices at 101 Park Ave., New York 17, N. Y. The company will be known as Seelye, Stevenson, Value and Knecht, consulting engineers.

A. W. Knecht

For the past four years, Mr. Knecht has been chief mechanical engineer and assistant chief engineer for Walter Kidde Constructors, Inc., and has been closely identified with the design and construction of laboratories, boiler plants, and manufacturing facilities for many manufacturing companies.

Newly Developed Plastic Pipe Fittings Reported

The Carlon Products Corp., 10139 Meech Ave., Cleveland 5, Ohio, announces the development and production of a completely new line of ells, tees, and couplings designed for use with the newly developed Carlon TL threadable, rigid plastic pipe.

Featuring International pipe threads, the fittings bring all the inherent characteristics of plastics to the field of fluid and vapor transmission. The Carlon fittings are molded from a single piece of thermo-plastic material and are guaranteed against rot, rust, and electrolytic corrosion.

These fittings can be used to join lengths of TL threadable plastic pipe or to join Carlon lines with previously installed metallic systems. Carlon TL pipe is furnished in standard coupled lengths and can be threaded with standard pipe dies. The firm reports that the pipe, also guaranteed against rot, rust, and electrolytic corrosion, is recommended for handling drinking water, sewage, industrial waste.

Plant General Manager

Walter A. Rentschler, vice-president in charge of the Lima-Hamilton Division of the Baldwin-Lima-Hamilton Corp., has announced the appointments of Henry Barnhart as general manager of the Lima, Ohio, plant, and J. F. Connaughton as assistant general manager. The company also has plants in Middletown and Hamilton, Ohio.

A vice-president of the corporation, Mr. Barnhart has served as general sales manager and vice-president. Mr. Connaughton, also special assistant to Mr. Rentschler, joined the firm in 1928.

Lima shovels, cranes and draglines are manufactured in the Lima plant.

This instrument, the Rolatape, measures quickly, easily and accurately. A news story describing the device, manufactured by Rolatape, Inc., 1415 14th Street, Dept. C, Santa Monica, Calif., appeared on page 165 of the March issue.

Efficient Equipment is Necessary for Effective Disaster Control

You will need the most modern Pipe Cutting equipment in order to make prompt restoration of service in the event of "Bomb" damage. Smashed gas and water mains and sewers give a tremendous urgency for prompt repairs.

This portable milling machine on wheels, can serve and save on regular construction and replacement programs. It can be a life saver if an emergency hits your city.

Here is a fast, portable pipe cutting machine that will take all sizes of cast iron and steel pipe from 10" in diameter on up. Makes cuts under water or in the presence of explosive mixtures. Adequate Civil Defense Protection requires that you have one or more of these machines available in your city.

- Minimum Pipe Line down time.
- Cuts under water in flooded ditches.
- No broken pipe, milled cut.
- Thor Air-Powered, no flames near pipe.
- Set-up time about 15 minutes.
- Portable — weighs only 265 lbs. Two men can carry and set up unit.
- Small excavation — only 16" clearance needed.
- One machine cuts all pipe sizes from 10" to 48".
- Only two adjustments necessary to change sizes.

Write or wire today for descriptive, illustrated folder.

THE E. H. WACHS COMPANY

Manufacturers of Engines, Valves and Machinery since 1883

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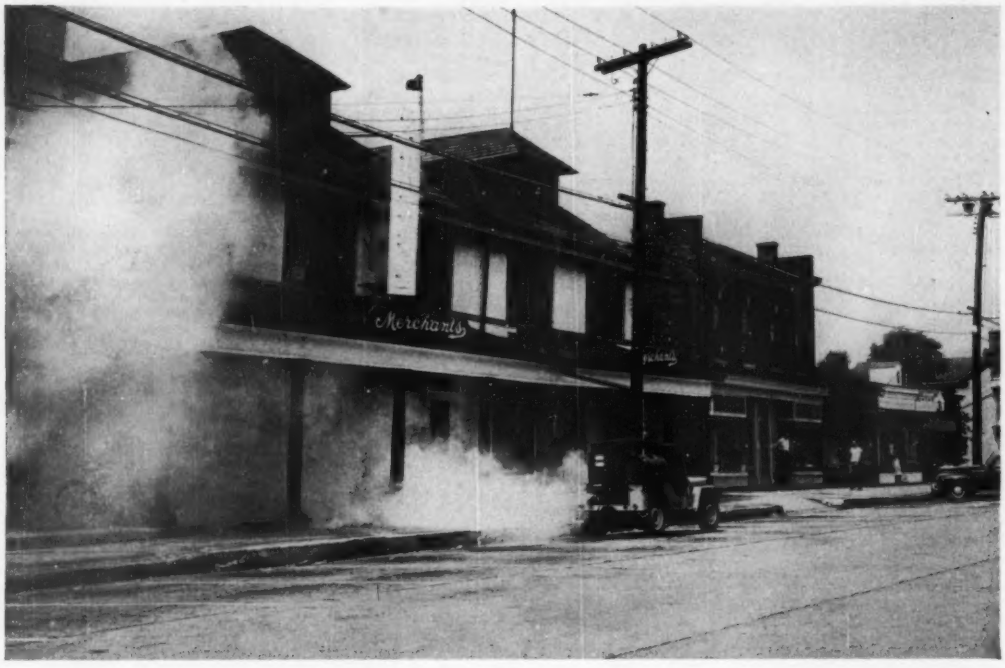


Before you buy an applicator—CHECK

Look over the field before you decide on the best equipment to eliminate flies, mosquitoes and other insects. Check these points about fog applicators. Is range of control of droplets from ½ to 200 microns? Can the unit handle solutions, emulsions and suspensions? How many insects does it kill per dollar?

You'll find TIFA meets your most rigid specifications. TIFA carries the Underwriters' Listing Seal—your guarantee of top performance. And TIFA is backed by 10 years of experience in manufacturing fog-machines!

You can use TIFA wherever your people congregate and insects annoy them. This amazingly efficient machine discharges insecticides in a *true, clean fog* which clings to every object . . . roots pests from every tiny crevice. It's quick and economical . . . compact and portable . . . self-powered and one-man-operated.

For better health and better living,
Put TIFA to Work in Your Community!

COMBUSTION EQUIPMENT DIVISION

TODD SHIPYARDS CORPORATION

81-16 45th Ave., Elmhurst, Queens, N. Y.

TIFA

TODD INSECTICIDAL FOG APPLICATOR

Carrying Underwriters' Listing Seal

DEATH-DEALING FOG FOR INSECTS

Write for illustrated folder on sensational TIFA—full details, official comments.

New Sales Manager

Edwin J. Noyce has been named sales manager of the John Bean Fog Fire Fighter Dept., according to an announcement from Hubert L. Byrd, manager of the John Bean Division of the Food Machinery and Chemical Corp., Lansing Mich. Mr. Noyce replaces Roy G. Pulver, who resigned to accept a post with the Michigan Civil Defense Council.

In the reorganization of the department, Walter D. Follette was named assistant sales manager, and Floyd Baker, veteran fire chief from Highland Park, Mich., will continue in charge of the John Bean Training School.

John Bean sales and training officials discuss plans for the High Pressure Fog Fire Fighter Dept. Left to right: Edwin J. Noyce, sales manager; Walter D. Follette, assistant sales manager, and Floyd Baker, in charge of the Training School.

BRAXMAR BADGES

Standard Badges Since 1879

Write for circular illustrating badges for Police, Fire and other City, County and State Officials

John O. Veit, Pres.

C. G. Braxmar Co., Inc:
216 E. 45th St., New York 17, N. Y.

"See . . . it's Bead Chain . . . just like yours"

NEW YORK CITY SCHOOLS ORDER IDENTIFICATION NECKLACES FOR ALL STUDENTS

BEAD CHAIN—used by the Armed Forces—will be worn by 2,000,000 students

An important move to safeguard the children of New York City was made by the Board of Education in ordering Identification Necklaces for all students in New York Schools. Each student will be issued a necklace carrying a tag on which is stamped the student's identity.

Taking a tip from Uncle Sam, who has had many years of experience with identification necklaces, the New York Board of Education chose a Kinkless Chain to carry the tags.

For years, our Armed Forces have selected Bead Chain for this duty. So flexible that it can't kink . . . attractive, smooth and comfortable . . . and very strong . . . Bead Chain also is preferred for religious chains and many other products made for personal wear.

Other Cities in various parts of the country are providing Bead Chain Necklaces for identification purposes.

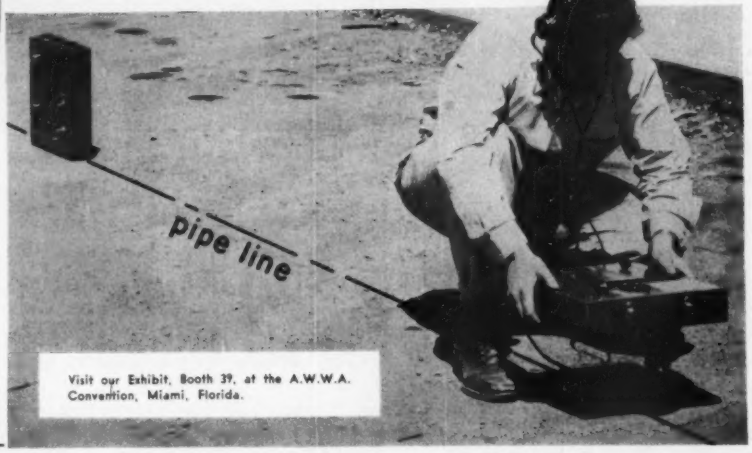
Write us for complete information about Bead Chain Necklaces.

The BEAD CHAIN* Mfg. Co.
*TRADE MARK
24 Mountain Grove St., Bridgeport, Conn.

With These

Fisher M-Scope Instruments

You can Solve All of Your Leak Detecting and Pipe Locating Problems



Above—"Midget" type Leak Detector (Standard model also available).

At right—Pipe and Cable Finder (2 models: Heavy-duty and Lightweight).

For small communities, a MIDGET combination Leak-Detector Pipe-Finder is recommended.

Visit our Exhibit, Booth 39, at the A.W.W.A. Convention, Miami, Florida.

FISHER RESEARCH LABORATORY, INC.
Palo Alto, California

PLAYGROUND EQUIPMENT

AMERICA'S FINEST

BUILT by BURKE

Designed expressly for safe healthy play. Approved by park and playground officials throughout the U. S. Strongly constructed with durable materials; easy, low cost maintenance.

Burke engineers will gladly help you plan your playground.

Invest in child happiness with BURKE-BUILT EQUIPMENT—Climbing structures, swings, slides, see-saws, merry-go-rounds, turning bars, horizontal ladders, etc.

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THE J. E. BURKE CO., Fond du Lac, Wis.

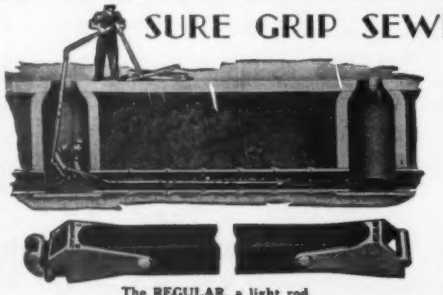
***Throughout* America—Dickinson Lawn Seed**

In parks and on public grounds throughout America you will find smooth velvety lawns built with time proven Dickinson lawn grass seed. Quality seed, blended according to formulas that have been tested and improved throughout the years. Write for complete information.

The Albert Dickinson Company, 2764 West 35th Street, Chicago 32, Ill.

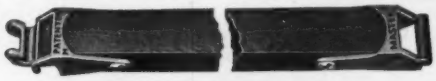
DICKINSON

SURE GRIP SEWER RODS and ACCESSORIES



The REGULAR, a light rod. Fir stock 1¾ x 1¼ inch square.

are joined together with a dual lock forming a rigid chain that will float. They can be coupled or uncoupled upon the street if desired. Made in two sizes.



The MASTER, a heavy duty rod. Fir stock 1½ x 1½ inch square.

Write for catalog on complete line of sewer cleaning equipment.

EXPANDING SEWER MACHINE CO.
NAPPANEE, IND.

Curbstone Opinion

John W. Channell (kneeling), a Philadelphia engineer, discusses the business ends of the manhole vacuum cleaner with J. J. McCarron, superintendent of transportation and shops for Consolidated Telegraph and Electrical Subway Co. The small line carries the agitator water. Water and dirt are sucked up from the manhole through the larger hose line.

The Mudsucker

A new hydraulic manhole cleaner has been developed and is now in use by the Consolidated Telegraph and Electrical Subway Co., New York, N. Y. The cleaner makes it possible to clean quickly about 135,000 manholes and 1,500 tranformer vaults that the company maintains.

The manhole-cleaning unit is mounted on an Autocar chassis, a cab-over-engine model whose short wheel base of 128 inches minimizes the difficulty of maneuvering on crowded city streets and permits the operator to park in small spaces.

The truck carries a big steel tank body, roughly six feet wde, ten feet long and four feet deep, with a capacity of nine cubic yards. Water is fed from the tank by gravity to a centrifugal pump powered by an industrial engine set crosswise on the chassis behind the cab. The water is discharged from the pump at 90 pounds pressure per square inch. Part of the flow, about 100 gallons per minute, is taken off into a small hose line, an agitator, for washing down the manhole walls and turning the dirt into a thick slurry.

The rest of the flow, the driving water, about 200 gallons a minute, is piped through the jet at the rear of the truck to create the suction in a 3-inch hose that is dropped into the manhole. The muck, sucked up through this hose, mixes with the driving water in the jet and is carried up into the tank. There a series of baffles and a screen settle the solids and the same water is used again through the same cycle until the tank is half filled with solids and has to be emptied.

The unit was developed by John W. Channell, general manager of the Derbyshire Machine and Tool Co., manufacturing engineers of Philadelphia. The eductor is one of the Derbyshire Co.'s standard products.

Water Well Construction

Three designs of water wells are available to fill municipal water supply requirements from Texas Water Wells, Inc., 951 McCarty Drive, Houston 15, Texas. Each is adaptable to further variations to meet the requirements dictated by the specific demands and the geological conditions which must be considered, company officials point out. These are the Single String Setting, the Two String Setting, and the Tru-Gravel-Wall well.

The Single String Setting, or straight wall well, is used where conditions are ideal and it is not necessary to block off contaminating surface water or water from unsuitable sands above the producing strata. The primary advantage of the Two String Setting is that the surface casing or pump pit casing may be set to the top of the water-bearing formation and cemented in place to prevent contaminated water from infiltering around bottom of casing, or it may be run to such depth as may be required for proper setting of the pumps.

The Tru-Gravel-Wall well design is an advanced type of water well construction that careful analysis of formations allows selection of the correct grade of gravel to hold back the sand. Placement of this carefully graded gravel by hydraulic methods greatly increases the effectiveness of the water reservoir, minimizing friction loss through the gravel wall and screen. This results in less drawdown and lower pumping costs.

FOR BETTER
pH Control
and WATER TESTS
there is nothing like
NON-FADING
GLASS COLOR
STANDARDS

Pocket Comparator No. 605

Permanent reliability of Hellige Glass Color Standards, accuracy of color comparison, simplicity of technique, and compactness of the apparatus are exclusive features of Hellige Comparators.

Write for NEW Catalog No. 600-10

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INCORPORATED
3718 NORTHERN BLVD. LONG ISLAND CITY 1, N.Y.
HEADQUARTERS FOR COLORIMETRIC APPARATUS

Long Life
EMBOSSED
REFLECTORIZED
TRAFFIC
SIGNS

WRITE FOR CATALOG
Cataphote
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TOLEDO,
OHIO

The Silent Watchman

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BUTTE, MONTANA	Box No. 383
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TAMPA, FLORIDA	Box No. 1642
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DALLAS, TEXAS	Box No. 1881
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WASAU, WISCONSIN	Box No. 682
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The Security of Your Water Tower
Is MANDATORY

— never before was that so ominously true —

The problems of civil defense are solvable as long as there is water

The terrifying problems are how to fight fires, run engines, treat injuries and prevent panic in case the water supply fails

Don't put trust in old, uninspected, unguaranteed water tanks and towers

Make Your Town's Water Tower
DIXIE-TIGHT

- By welding rivets and seams—15% stronger than when built
- By necessary repairs guaranteed for 10 years
- By painting guaranteed for 5 years
- By yearly inspection thereafter without cost—Water supply maintained during re-conditioning
- By writing us today

DIXIE TANK & BRIDGE CO.

3523 Lamar Ave. Memphis 1, Tenn.

The NEW 1951 City Special

SAFETY
LINE MARKER

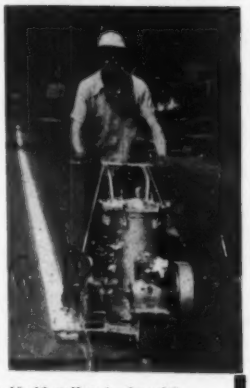
VERSATILE—
paints streets, crosswalks, parking lines, industrial plants, safety zones

COMPACT—
upright tank — light weight

STURDY—
one-piece steel tank — baloon tires, non-corrosive metal

ACCURATE—
ribbon - like, no - bleed lines on any surface

EFFICIENT—
paints for hours on one filling of paint and air



Also available with 2, 7, 10, 12-gallon tanks with engine and compressor built on—hand or traction drive models—paints 2 to 6" lines.—Single or double lines. Bead Dispensers. Truck models available.

G. N. SPIESS EQUIPMENT CO.

Phone: Bluemound 8-5387

6823 W. Aetna Court Milwaukee 13, Wis.

WITH A WILKINSON LINE LOCATOR

You DON'T have to GUESS

WILKINSON LINE LOCATOR

the original light-weight, compact, precision locator — is **POWERFUL.**

It locates every part of your underground pipe system, however deep and shows the depth of lines.

It's FAST, EXACT, SIMPLE.

Avoid expensive damage to subsurface structures by power trenching machines with the Wilkinson Line Locator, the electronic sleuth.

To Spot Your
- MAINS
- SERVICES
- STUBS
- VALVES
- BOXES
- COUPLINGS

QUICK FAST EXACT

QUALITY IS ALWAYS CHEAPER

WILKINSON PRODUCTS CO.

3987 CHEVY CHASE DR.
PASADENA 3, CALIF.

Worthington Personnel

W. F. Weinreich A. W. Fraser

William F. Weinreich, formerly assistant superintendent of machine shops at the Buffalo plant of the Worthington Pump and Machinery Corp., Harrison, N. J., will be in charge of the firm's newly acquired Oil City, Pa., plant. He will be assistant to Austin C. Ross, vice-president, who is in administrative charge of the plant as well as being in charge of the Buffalo plant.

John Mikulak

The Oil City plant and facilities were acquired by Worthington from the National Transit Pump and Machine Co., which was liquidated.

A. William Fraser, former general European manager, has been appointed midwest sales manager, according to an announcement by W. H. Feldman, vice-president in charge of sales. Mr. Fraser will direct the sales of Chicago, St. Paul, Kansas City, and St. Louis offices, making his headquarters in Chicago.

Named assistant to L. C. Ricketts, vice-president in charge of manufacturing was John Mikulak, who had previously specialized in the development of welded products and methods for the American Car and Foundry Co.

Asphalt Institute Appointments

Bernard E. Gray, president of The Asphalt Institute, 801 Second Ave., New York 17, N. Y., announces the appointment of John H. Goshorn as district engineer, with headquarters at 431 Main St. in Cincinnati, covering territory in Ohio, Indiana, Michigan, Kentucky, and West Virginia. Also reported was the promotion of Albert H. Hinkle to the rank of division engineer.

Mr. Goshorn is well versed in activities relating to bituminous materials. He worked closely with the Design, Construction and Maintenance Bureaus of the Ohio State Highway Dept., and was among the engineers instrumental in developing the bituminous concrete items that have become popular in construction, salvage, widening, and resurfacing in Ohio.

Mr. Hinkle had been senior engineer on the district engineering staff.

Wise Old Owl says:

"Neglect is the worst abuse a chain saw can get. In ordinary times, the worst name you could call that would be *waste;* now it's a downright crime. Saws are already in short supply; parts hard to get. Figures show that approximately 70 percent of repairs to chain saws are caused by *damaged*—not worn out—parts. Most of this damage can be prevented. What can I as a chain saw owner do? It's as simple as one, two, three:

1. KEEP IT CLEAN. Every day I clean the sawdust, leaves and muck from my machine.

2. KEEP IT OILED. Regularly, and according to the book.

3. KEEP IT SERVICED. I watch my saw the way a mother watches her child's behavior. A bolt tightened in time may save many days in the repair shop.

"Works, too. My four-year-old Disston still cuts as much wood as it did when it was new."

JOIN IN DISSTON'S GREAT NEW FIGHT WASTE PROGRAM

The times are serious. We don't know what lies ahead. But we do know there will be increasing shortages of strategic materials. At the same time there will be an increasing demand for chain saws and for forest products of all kinds. This means that, as new chain saws become hard to get, your old saw becomes more and more valuable. You will be helping your country and yourself by fighting waste *now*. How? It's really very simple. Follow these two easy steps . . .

MAINTAIN YOUR CHAIN SAW. Disston makes available—absolutely without cost—valuable preventive maintenance booklets and check-up charts. Follow these and you'll have a minimum of trouble. Send for your free copies today!

SERVICE YOUR CHAIN SAW. Disston Dealers are cooperating with the Fight Waste Program. They are located at strategic centers near you, and they are chain saw experts. You will save time and money by making a practice of bringing your chain saw in regularly for a check-up. These specialists can spot little troubles before they become big and expensive troubles . . . can help you get the most out of your chain saw.

HENRY DISSTON & SONS, INC.

11D TACONY, PHILADELPHIA 35, PA., U.S.A.

In Canada, write: 2-20 FRASER AVENUE, TORONTO 3, ONT.

KA-MO
the Earth Drills with the Pull!

Unlike augers (which have to be weighted or pushed to bore through packed earth), the KA-MO Drill *pulls* itself into the earth—and it drills vertical, horizontal, or slanting holes at any angle.

KA-MO Drills cut all the way around the hole so that a column of earth is removed cleanly when the drill is withdrawn.

KA-MO Drills bore through tough soils—hardpan, gumbo, clay and even through frost. (A telephone company bored 16" dia. holes through frost 2 to 3 ft. deep in 5 to 8 minutes;) Drills through sand, gravel, or silt, using a caisson to prevent loose soil running into the hole.

KA-MO Drills bore holes hundreds of feet long for Conduits and Pipe Lines, from 2" diameter up to 36" diameter. Uses Caissons for long or large Pipe Lines. Saves the high cost of Trenching, Back Filling, Restoring Lawns—and there's *no settling of the Earth above bored holes!*

Bores Holes for Poles, Piling, Concrete Piers up to 30" diameter, Posts, Anchors, and Wells of all kinds—including standby Wells for use when other Water Supply is interrrupted.

KA-MO Drills can be mounted on a Tripod and operated by an Electric Motor or Power takeoff of a Truck. Get the facts on this money and time-saving method of drilling all kinds of horizontal, vertical and slanting holes.

KA-MO TOOLS, INC.
1845 So. 55 Ave., Cicero (Chicago Suburb), Ill.

z5536

Unit "UTILITY" HOIST
HYDRAULICALLY OPERATED FOR SHOP OR TRUCK
FAST...EASY...SAFE!

NOW . . . reduce material handling time to a minimum with the fast UNIT UTILITY HOIST. One man handles heavy loads where several men were used before. Eliminates serious accidents caused by heavy hand lifting. Reduces labor costs, increases work output per day.

★ **FROM SHOP TO TRUCK HOIST** in seconds! Simply lift UNIT UTILITY HOIST from 3-wheel frame, place in socket or well mounted on truck bed, work bench, loading dock or machine tool. Hoist swings 360 in well.

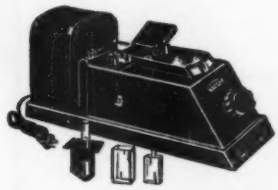
Write Dept. C for Complete Details

UNIT HYDRAULIC EQUIPMENT

Manufacturers of hydraulic cylinders for original equipment.

UNIT MANUFACTURING CO
1229 HARMON PLACE • MINNEAPOLIS 3, MINNESOTA

KLETT SUMMERSON
ELECTRIC PHOTOMETER
Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street **New York, N. Y.**

The truck chassis carrying this flusher has been built strong enough to do winter and snow plowing when needed.

Racine's New Street Flusher

A model L-202 International truck does double duty in Racine, Wis. Made by the Motor Truck Division of the International Harvester Co., Chicago 1, Ill., the new vehicle is designed for use with street-flushing equipment during summer and snow removal in the winter. Approximate unloading time of the 1,800-gallon flusher tank, under pressure, is four minutes.

For snow removal, the flusher is replaced with an 11½-foot dump body, hoist, and snow plow. An International Super Red Diamond six-cylinder engine develops 154 maximum brake horsepower at 3,200 revolutions per minute to supply power through a five-speed-forward transmission.

Project Engineer

Andrew A. Melnychuk has been appointed project engineer in the home office of the Omega Machine Co., 345 Harris Ave., Providence, R. I. He will work on development and research in the problems of chemical feeding as they occur in chemical industry, foods, plastics, petroleum, pulp and paper, and water and sewage.

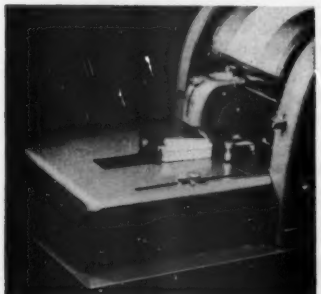
A. A. Melnychuk

The Omega Machine Co. has a long record of development in the field of chemical feeding equipment, and in particular, to water and sewage works fields.

Mimeographed Eyelet Tags

Automatic, precision mimeographing of all types of eyelet tags now is possible through the use of the new eyelet tag separator just announced by the A. B. Dick Co., 5700 W. Touhy Ave., Chicago 31, Ill., manufacturer of mimeograph equipment and mimeograph and lithograph supplies.

The eyelet tag separator is incorporated in a special feed table which may be attached to current table model A. B. Dick mimeographs. It permits quick and easy automatic feedings of tags in sizes ranging from 2½ to 8½ inches in width and 5 to 14 inches in length. Simple tag feeding and accurate registration is assured at all machine speeds.



Single tag feeding and accurate registration is assured with this new eyelet tag separator.

TARCO

can carriers

No. 16-S

"Street Sweeper's Friend"

Single-piece welded frame. Choice of tiring: pneumatic, solid rubber, plain steel. Roller bearings. Full swiveling caster wheels. Silent can clamp. Safety warning flag. Balanced and light running.

TARCO welded carriers are STRONG.

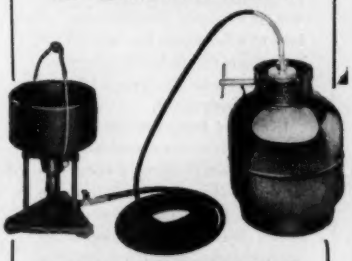
TARRANT MFG., CO.

East Ave., Saratoga Springs, N. Y.

Insto-Gas

FLOOR TYPE MELTING

FURNACE



FOR WATER WORKS CONSTRUCTION

Now the famous Insto-Gas plumbers furnace is available in the handy floor-type style for greater convenience of operation in ditches, under buildings and hard to get at places.

The Insto-Gas floor-type furnace has all the Insto-Gas features — instant lighting, safety, portability and economy.

This furnace has a melting speed of 40 lbs. of lead in six minutes. It can be used for melting metal, asphalt, paraffin and compounds.

With a 50 ft. hose, the furnace can be moved right to the work without moving the cylinder. The flame control valve is located at the furnace.

INSTO-GAS TORCHES

Water Works maintenance departments also use Insto-Gas torches for melting out bell joints and soldering work.

Insto-Gas equipment is listed by both Underwriters Laboratories and Factory Mutuals Laboratories

Write for Complete Information or Use the Coupon

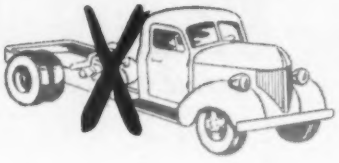
Please send information on Insto-Gas to:

NAME .....

ADDRESS .....

AC

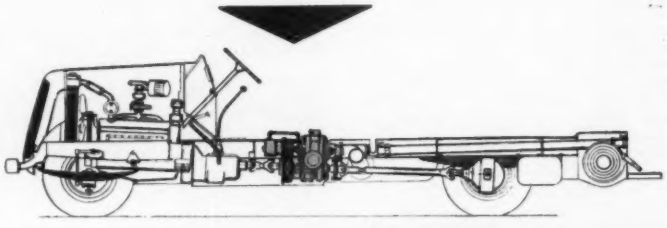
Insto-Gas Corporation · Detroit 7, Mich.



NOT THIS
BUT THIS

Look at a Seagrave. You will not see the pump in the old-fashioned position on top of the frame where it takes up valuable body space.

Improved Seagrave construction places the Seagrave Centrifugal deep in the chassis. This gives a lower center of gravity plus a great increase in safety. It also provides a straight driving line from the engine to the pump, thereby eliminating vibration and making for top efficiency in operation . . . Another vivid demonstration of Seagrave leadership in fire apparatus design.



THE GREATEST NAME IN FIRE APPARATUS

THE SEAGRAVE CORPORATION—Columbus, Ohio
Bickle-Seagrave, Ltd., Woodstock, Ont.

Seagrave

CITY MANAGER, N. G. DAMOOSE, REPORTS—

AUTOMATIC VOTING MACHINES

Reduce

Election Costs in the City of Ypsilanti, Michigan

In 1946, Ypsilanti, Michigan, using the old paper ballot system, cast 5,328 votes at an average cost per vote of 28.4 cents. At the recent November 7th, 1950 election, using AUTOMATIC VOTING MACHINES, the City cast 5,418 votes (nearly 100 more), at an average cost per vote of 13.2 cents.

In 1946, 74 poll workers earned $1,513, compared to the $715 that 46 workers drew on November 7th, 1950. Savings in labor and printing bills amounted to about $1400.

Similar savings are possible in your community. We should be pleased to estimate such savings at no cost or obligation to your community. Write—

AUTOMATIC VOTING MACHINE CORPORATION

JAMESTOWN 55, NEW YORK

Earth Auger For Tractor

The Trackson Model EA4 Earth Auger is now available with the Caterpillar D4, 60-inch-gauge tractor, reports the Caterpillar Tractor Co. Peoria 8, Ill. A fast, dependable, earth boring and pole setting machine, the Earth Auger assures construction firms; lighting and power companies; railroads, street and highway departments, a full range of boring positions for drilling holes vertically or at any usable angle.

The Model EA4 will drill holes 9 inches to 24 inches in diameter, to a depth of 8 feet with the standard 13-foot bar. Larger diameter holes can be bored. The solid Auger bar is square, permitting full bearing contact through the driving head. It has a 5,000-pound capacity winch which handles poles up to 50 feet in length.

The Auger unit is compactly mounted on the Caterpillar D4 tractor for running over rough ground or working in close quarters. The tractor has the 5-roller non-oscillating track frame, large front idlers and 16-inch grouser tracks which provide stability and balance in all types of terrain.

This unit can be employed for drilling holes for poles, anchor holes or tower footings, and for setting power line poles.

Oxygen for Civil Defense

Long recognized as a first-aid measure as well as a hospital aid, oxygen equipment is increasingly entering into civil defense plans as well as becoming standard on municipal rescue squads. As an illustration, a recently built disaster trailer unit for civil defense carries a complete set-up of medical supplies including operating tables which fold down from the sides of the trailer. The oxygen system consists of two cylinders of oxygen with masks and facilities for treating ten patients. It was designed and supplied by Oxygen Equipment & Service Co., 8335 S. Halsted St., Chicago 20.

Preventive Maintenance Prolongs Life of Trucks

Dean A. Walters, service manager for Willys-Overland Motors, Inc., Toledo 1, Ohio, has designed a preventive maintenance system to keep trucks and commercial cars rolling. He points out that government restrictions on the use of vital materials will curtail the number of trucks produced and the number and quality of replacement parts.

The steps in his process for longevity of trucks are:

Lubricate chassis; check transmission, differential and battery every 1,000 miles.

Change engine oil every 1,500 to 2,000 miles.

Inspect brakes, brake cylinders, and fluid every 2,000 miles.

Check wheel alignment, axle caster and camber, and steering connections every 1,000 miles to save tires.

Inspect clutch and pedal adjustment every 2,000 miles.

Repack front wheel bearings, renew transmission and differential lubricant every 5,000 miles.

Tune up engine, tighten chassis, body bolts and electrical connections every 5,000 miles.

In addition, Mr. Walters said truck and commercial car owners should include a plan to handle minor repairs immediately.

HERE
HERE
HERE
Here's where savings start
Save on man-hour costs and expensive lumber
Complete each job faster and get better quality finished work
Use the same forms over and over for a wide variety of jobs

with BLAW-KNOX
STEEL CURB and GUTTER FORMS

FOR simple straight work or curved shapes, Blaw-Knox Curb and Gutter Forms save money on every job. Easy to set and strip, they complete the job faster and well within your estimate. Costly hand finishing is eliminated. You not only save on materials but finished jobs have a perfection impossible to achieve with wood forms. Maintenance is practically non-existent.

Start your set of Blaw-Knox Steel Forms *now* —expand at any time for future requirements.

WRITE FOR BULLETIN 2259 —28 pages illustrate form setups for every type of work, with complete instructions on how to use them.

CURB AND GUTTER FORMS. For combined concrete curb and gutter when curb is battered.

STRAIGHT CURB FORMS. For curb with both faces vertical. Auxiliary bracing system for lateral stability.

SIDEWALK FORMS. Furnished for any required width or thickness of sidewalk.

FLEXIBLE STEEL RADIUS FORMS. For curved work of variable radius. Back forms, gutter forms and battered curb face form can be set to any desired radius.

BLAW-KNOX
BLAW-KNOX DIVISION of Blaw-Knox Company
2009 Farmers Bank Bldg., Pittsburgh 22, Pa.
New York • Chicago • Philadelphia • Birmingham • Washington • San Francisco

Underwood Sundstrand

Automatic Accounting Machine

It's so simple

Radford, Va., proves two utility billing facts that can save your water, electric, sewer and refuse departments' time and money. The first is the right type of bill and the second is the right billing machine. Here's what Radford's City Manager says about each:

1. **The bill in its present form (postcard-duplicate) has proved most satisfactory in every way. Our Utility Department sends out between three and four thousand bills each month and with the savings we are realizing over the old method the new billing machine will pay for itself in a comparatively short time.**

METER READING PRESENT	METER READING PREVIOUS	CONSUMPTION*	CHARGE	SERVICE CHARGE	SEWER
7092 EL	7048 EL	44 EL	206 EL	100	50
3055 WA	3037 WA	18 WA	125 WA		
					481

*WATER METER READING AND CONSUMPTION IN 100 GALS.

THIS ACCOUNT DUE AND PAYABLE ON 15TH OF MONTH. SERVICE SUSPENDED IF NOT PAID BY 20TH OF MONTH.

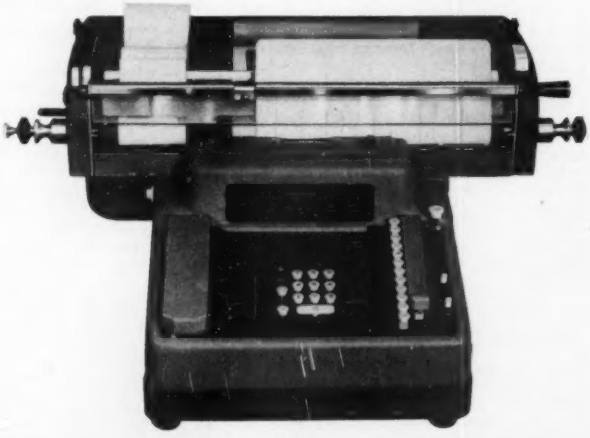
CITY OF RADFORD
DEPARTMENT OF PUBLIC UTILITIES

PAY THIS AMOUNT

EL ELECTRICITY
CE COMMERCIAL ELEC
WA WATER
PW POWER

Just a 3¼ x 5½ Government postcard, but with the data printed on it by the Underwood Sundstrand Automatic Accounting Machine.

2. **After a thorough study of these machines and after getting information from other towns and cities it was decided to purchase an Underwood Sundstrand Automatic Accounting Machine.**



More and more municipal utilities prefer postcard billing. Let us send you the particulars that make it most practical—and profitable.

UNDERWOOD CORPORATION

Accounting Machines . . . Typewriters . . . Adding Machines . . . Ribbons, Carbon Papers and other Supplies

One Park Avenue — **New York 16, N. Y.**

Sales and Service Everywhere

Sales Engineer

Peter P. Babin has been assigned to the San Francisco branch office of the pump division, Byron Jackson Co., according to Lynn Sawyer, general manager of the division and vice-president of the company. Mr. Babin's title will be that of sales engineer.

P. P. Babin

Byron Jackson P. O. Box 2017, Terminal Annex, Los Angeles 54, Calif., is well known for its work in the construction of various types of pumps. Of particular interest are the submersible pumps whose motors work with great dependability, even though submerged under water.

Hand-Chased Bronze Tablets

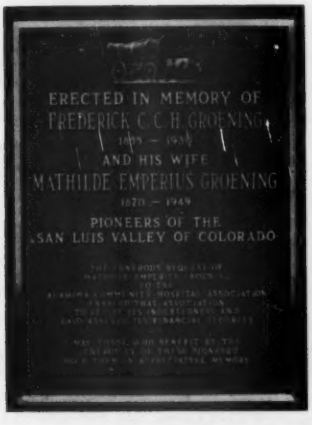
Hand-chased tablets of bronze are available from Meierjohan-Wengler, 1102 W. 9th St., Cincinnati 3, Ohio. Tablets in any size and description are produced, all lettering is carefully hand-chased, and all designs meticulously hand-tooled.

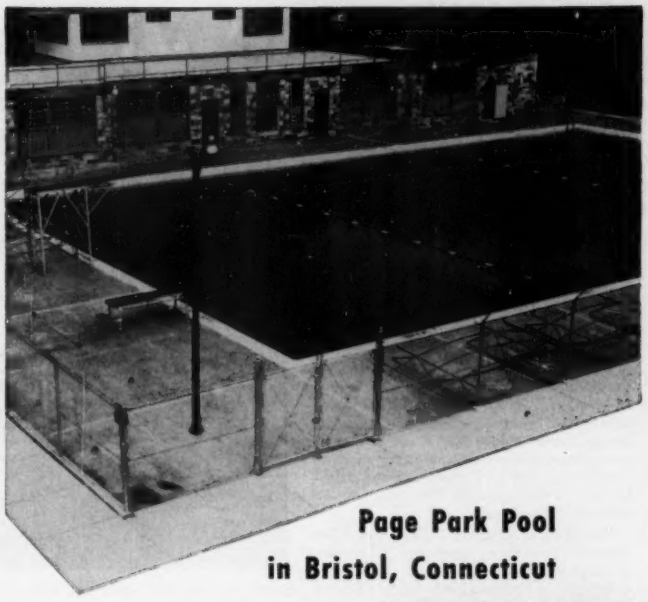
Portraits in bronze are created by the firm's sculptors who work from photographs of the subject in modeling.

Should your municipality be in need of bronze honor rolls or memorial tablets, this company will submit suggested layouts, if you advise them of the approximate size wanted, inscription, and the number of names.

Other material includes bronze plaques with individual name plates, illuminated bronze signs, as well as emblems, insignia, decorations, and other embellishments.

Metal craftsmen and manufacturers of non-ferrous castings, Meierjohan-Wengler produce installations in bronze, aluminum or wrought iron. Write for descriptive booklet.





Page Park Pool in Bristol, Connecticut

...protected by CYCLONE FENCE

● There's no danger of "uninvited guests" at this swimming pool. Entrance and exit traffic can be accurately controlled with a minimum of effort, because that sturdy Cyclone Chain Link Fence with its barbed wire top extension is practically trespasser-proof.

Wherever it is necessary to insure public safety, collect admissions, establish property limits or exclude vagrants and marauders, more and more municipal authorities are taking advantage of the fine protection Cyclone Fence affords. Its strong construction, its corrosion-resistant "Galv-After" finish—plus expert erection by Cyclone's own factory-trained crews—assure years of complete, economical protection for any project.

No matter what type of fencing problem may be facing you, there is a Cyclone Fence just right to handle it. Get in touch with our nearest sales office and ask for a free recommendation from our fencing engineers. There is no obligation. And meantime write for a copy of 32-page fence booklet. It is packed with examples of many typical installations and carries complete information on the entire Cyclone Fence line.

NO JOB IS TOO LARGE
NO JOB IS TOO SMALL
FOR CYCLONE*

CYCLONE FENCE DIVISION
(American Steel & Wire Company)
WAUKEGAN, ILLINOIS · BRANCHES IN PRINCIPAL CITIES
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS CYCLONE FENCE

*Cyclone is the trade-mark name of fence made only by Cyclone Fence Division. Accept no substitute.

—CLIP THIS COUPON—SEND IT TO—

Cyclone Fence, Waukegan, Ill., Dept. B-41
Please mail me, without obligation, a copy of "Your Fence."

Name.....

Address.....

City.....State.....

I am interested in fencing:

☐ Industrial; ☐ School; ☐ Playground; ☐ Residence.

Approximately .....feet

UNITED STATES STEEL

CINCINNATI IS WHIPPING THE HIGH COST OF BULK RUBBISH COLLECTION

Man-hours required for big tonnage collection cut 60 percent.

The City of Cincinnati gives Eight Reasons Why the Dempster-Dumpster System cuts bulk trash and rubbish collection costs and cuts work time from 2.43 man-hours to .98 man-hours per ton of material delivered to incinerator.

Recently a large Southwestern city, investigating the Dempster-Dumpster System of trash and rubbish collection, requested information from the City of Cincinnati on results obtained with the Dempster-Dumpster System. Here is the reply they received from Mr. Ralph C. Taylor, Superintendent of the Waste Collection Division, Department of Public Works.

"The City of Cincinnati Waste Collection Division has been using the Dempster-Dumpster System to augment its regular collection set up since 1948. Our experience since that time indicates that this system, utilizing the principal of large containers which can be left at rubbish accumulation points and easily picked up and carried to disposal point by a Dempster-Dumpster pick-up unit operated by the driver, is highly desirable. Our records indicate that the operation of these units require .98 man-hours per ton delivered to the incinerator as compared to 2.43 man-hours per ton needed in the operation of conventional pick-up with dump truck and crew.

"I have listed below some of the advantages of the Dempster-Dumpster System as we see them.

"1—These large heavy duty containers can be placed on the ground or in specially designed pits if so desired at the point of accumulation and loaded directly by the recipients of the service rather than placing the waste in some intermediate container. This eliminates rehandling by the collection forces in loading into standard collection units, a costly process.

"2—These containers offer a low loading height, making their application easy to any given situation.

AN APARTMENT TYPE detachable Dempster-Dumpster Container is shown above at accumulation point.

ONLY ONE MAN, THE DRIVER, is required in the Dempster-Dumpster System of municipal trash and rubbish collection. Driver is shown above attaching lifting chains to a drop bottom container. He will return to cab and from hydraulic controls hoist pre-loaded container into carrying position and drive to disposal area where materials will be dumped automatically.

"3—This system eliminates the idle time of trucks standing while loading at these points of large accumulations and eliminates lost labor time waiting for the trucks to return after its trip to the disposal area.

"4—The containers are of rugged construction and are practically indestructible. We feel that one of these containers over a period of time will cost less to buy and maintain than the refuse cans it replaces.

"5—Where necessary, leakproof containers may be used, eliminating the spillage of noisome wastes and the resulting unsanitary conditions.

"6—The rat nuisance is practically eliminated with this type of container and we have several outstanding examples where remarkable cleanups were made.

"7—Litter around the loading station is practically eliminated by the use of these containers. This is in outstanding contrast to stations using a great number of the conventional trash cans where the handling of lids and cans by the users usually results in overloading and improper covering.

"8—These detachable containers lend themselves readily to clean dumping at the disposal point. They can also be kept clean and sanitary with greater facility than the small container.

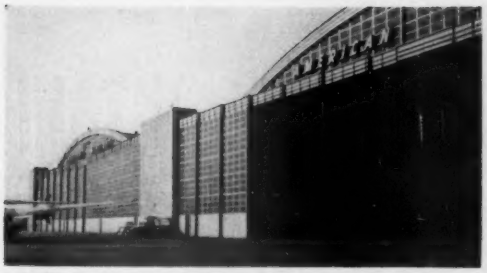
"At the present time in Cincinnati the Waste Collection Division is using these containers for both combustible and non-combustible wastes at the following type of institutions where large quantities of wastes are produced: Schools, Railroad Passenger Terminal (garbage from dining cars), Railroad Produce Terminal, Hospitals, Large Apartment Developments, Social Benefit Functions and Feasts, Circuses and Fairs."

Cities and towns everywhere are installing the Dempster-Dumpster System because no other method of bulk rubbish handling by truck can match the Dempster-Dumpster System in low cost of operation, efficiency, sanitation and good housekeeping! For a cleaner city and a lower budget, it will pay you to investigate the Dempster-Dumpster System. Write today for complete information. A product of Dempster Brothers, Inc.

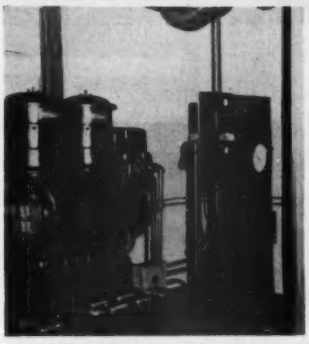
DEMPSTER-DUMPSTER Container with drop bottom dumping action is shown above as it begins to open hydraulically and discharge trash and rubbish.

DEMPSTER DUMPSTER
TRADE MARK REG.

DEMPSTER BROTHERS
841 DEMPSTER BLDG.
KNOXVILLE 17, TENNESSEE



The new American Airline hangars.



The automatic fire panel installation at American Airlines.

Fire Protection In an Airline Hangar

Two new American Airlines hangars at Chicago's Midway Airport cover a city block in length and cost $3,000,000. Each hangar may have as many as five DC-6's in it at one time and, at $650,000 per plane, the sprinkler system has the responsibility of protecting close to $10,000,000 worth of property.

Power for sprinkler pressure is regularly supplied by electric motor driven pumps. As a precaution against possible power failure due to storm or fire, an auxiliary internal combustion engine driven pump is provided. This pump is equipped with a completely automatic Universal engine controller, designed and built by Synchro-Start Products, Inc., for the A. F. Barron Co. of Chicago.

In the boiler room of these hangars are three Peerless fire pumps of 2,000 gpm capacity at 100 psi. They are driven by two 150-hp General Electric motors and one General Motors diesel engine. The first motor starts when the water pressure drops to 90 pounds, and the second motor starts when the pressure drops to 85 pounds. Below 85 pounds the automatic controller will start the diesel driven pump and keep it running until the pressure is again built up to normal.

The control panels are fitted with visual and audible alarms in case of fuel failure, drop in oil pressure, overspeed, or if the engine overheats. A four position—Test, Automatic, Off, Manual—switch is provided and in normal operation is placed on (Automatic." The "Off" position provides against the engine starting while being serviced. The "Test" point permits manual testing through the automatic controls. In the "Manual" position, the automatic controls are by-passed and the engine is started by pushing the starting switch. In case of failure of any part of the automatic control, the engine can be started with this switch.

A.W.W.A. Miami Meeting's Preliminary Program

The preliminary program of the American Water Works Association's 71st annual meeting, April 29 to May 4 in Miami, has been prepared, according to Harry E. Jordan, secretary. A copy may be obtained by writing to the Association office at 521 5th Ave., New York 17, N. Y.

TOSSITS

KILL MOSQUITOES
20 TIMES FASTER
THAN HAND SPRAYING

NO MOSQUITOES IMMUNE—Our new formula consisting of a combination of newer insecticides gives a 100% kill of all species of mosquito larvae.

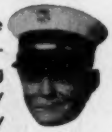
EASY TO USE — No equipment needed. TOSSITS are water soluble capsules. Simply toss in water—capsule dissolves—specially formulated "killer" spreads rapidly in all directions.

ECONOMICAL—One TOSSIT will larvaecide over 1,000 square feet of water surface; 50 TOSSITS per acre will give 100% kill of all larvae in 24 hours.

TOSSITS are packed 1,000 to the carton, listing at $39.50 FOB, West Palm Beach. Discounts to cities, counties and states.

SENTCO, INC.
(formerly Southern Entomological Co.)
2400 Tamarind Avenue
West Palm Beach, Florida

sure, WE USE SHUREDRY



The word gets around — one fire chief tells another of his successful experience in reducing fire losses with Fulton Shuredry Salvage Covers. We sincerely appreciate this thoughtfulness of our friends, which is not only a strong recommendation for our product, but good gospel for cutting fire losses to a minimum. Fulton's Shuredry Green-Bak Salvage Covers are approved by National Board of Fire Underwriters and by Factory Mutual Laboratories and top every test for water penetration and seepage. When your next equipment order calls for Salvage Covers, we will thank you to specify Shuredry from your fire equipment dealer.

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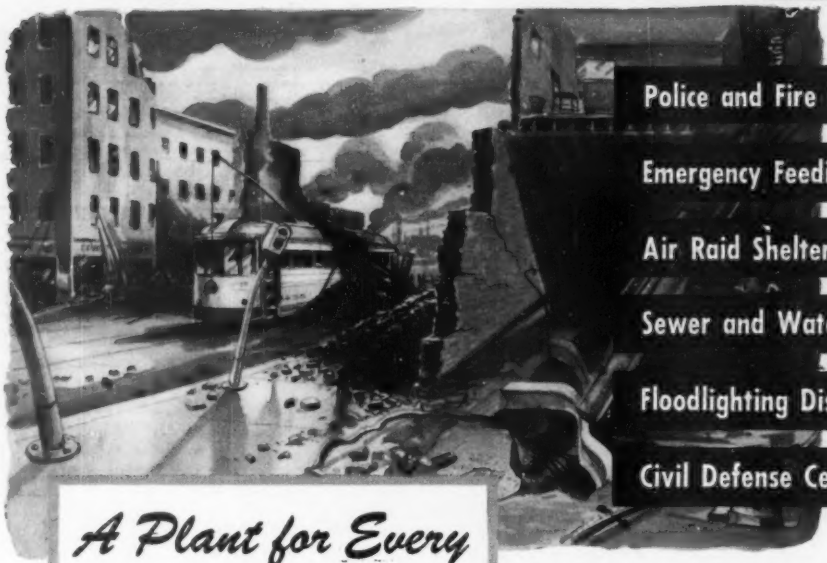
BAG & COTTON MILLS
Atlanta • St. Louis • Dallas • Denver • Kansas City, Kans.
Minneapolis • New Orleans • Los Angeles • New York City, 347 Madison Ave. • Winter Haven, Fla.

In time of disaster...

Emergency Electric Power is VITAL!



- Police and Fire Radio
- Emergency Feeding Centers
- Air Raid Shelters
- Sewer and Water Systems
- Floodlighting Disaster Areas
- Civil Defense Centers

A Plant for Every Emergency Need!

PORTABLE

Lightweight Onan Electric Plants are available with carrying handles or mounted on two-wheel dollies, for easy portability. Single-cylinder plants from 400 to 1500 watts. Two-cylinder, air-cooled plants to 5,000 watts.

MOBILE

Truck or trailer-mounted units from 5,000 watts and up can be rushed from place to place as required by the emergency. Electric Plants of this size can supply power for telephone exchanges, emergency feeding and housing centers, police stations and fire halls.

STATIONARY

Where emergency electric power must be available instantly, such as in a hospital or radio station, permanent standby installations are recommended. Onan Electric Plants from 1,000 to 35,000 watts can be equipped with automatic start and stop controls. These high-capacity units are powered by heavy-duty, water-cooled engines.

ONAN Electric Plants Supply Standby Electric Power for Civilian Defense Corps

Central station power is almost certain to be a casualty during bombing raids or natural disasters.

Without electric power and light, the ability of a city defense and disaster organization to cope with a catastrophe drops dangerously.

But power for essential uses is always instantly available when Onan Electric Plants are stationed at strategic points throughout the city. Onan self-contained units, mounted on trucks or trailers can be rushed to any point where power is needed. They are an important link in a city's first line of defense against disasters of any kind.

Write for Folder

Onan PRODUCTS

D. W. ONAN & SONS INC.

7640 University Avenue Minneapolis 14 Minnesota

This is a small Crosley ambulance. Although developed primarily for use in industrial plants, it also shows application for certain municipal industries.

Small Ambulance for Auxiliary Use

A small ambulance built on a Crosley chassis gives promise of being a useful auxiliary ambulance in general municipal work. The manufacturer, Crosley Motors, Inc., is located at 2530 Spring Grove Ave., Cincinnati 14, Ohio.

Its immediate applications are suggested in athletic and recreational areas where the small size of the ambulance makes it easily maneuverable. It also shows usefulness in the small communities that need ambulance service, but are unable to purchase larger equipment.

Gravel-Wall Wells

More yield and better quality water appear to be the main benefits gained by the use of the gravel-wall well designed and perfected by Layne & Bowler, Inc., Memphis 8, Tenn. The company also manufactures such well construction equipment as the Layne shutter screen for use in gravel-wall wells, and a complete line of vertical turbine pumps.

The firm has test data showing that its under-reamed gravel-wall wells assure maximum production from water-bearing formations. It also provides cemented wells if ground conditions require it; it can build deep gravel-wall wells which incorporate one or more water-bearing horizons, and construct tubular and rock wells.

A new booklet by the firm, *Layne Well Water Systems*, discusses these methods, as well as special drilling, such as core sampling for foundation soundings, and illustrates the application of the Layne shutter screen and Layne pumps. Also included is a water conditionng section and engineering tables.

Plastic Rock ... THE IDEAL SIDEWALK SURFACING

Here is a *modern*, thoroughgoing method of renewing city sidewalks and protecting the valuable rental space underneath. Plastic Rock processes make an enduring job, waterproof where necessary; not affected by heat or cold; easy to apply; absolutely slip-proof wet or dry; applied without interruption of traffic; dry ordinarily in 24 hours. Used and praised by many large cities and property owners. Plastic Rock is packed complete in sealed barrels; ingredients are uniform; merely add water; U. L. I. field supervision is available without obligation.

Write for Our Report No. 220-36

UNITED LABORATORIES, Inc.
16820 Euclid Ave., Cleveland 12, Ohio

We shall be glad to give you a complete, reliable report on your sidewalk situation. No obligation.

PRODUCTS AND PROCESSES for PROTECTING PROPERTY
Field Representatives All Over The World

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Highest Quality
FIRE ALARM
TRAFFIC CONTROL
and
STREET LIGHTING
CABLE

IMMEDIATE DELIVERY

Priced substantially BELOW MARKET

Huge purchases from government stocks enable us to offer unusually low prices to municipalities. This high quality cable is available for immediate delivery from world's largest stock.

May we quote on your requirements?

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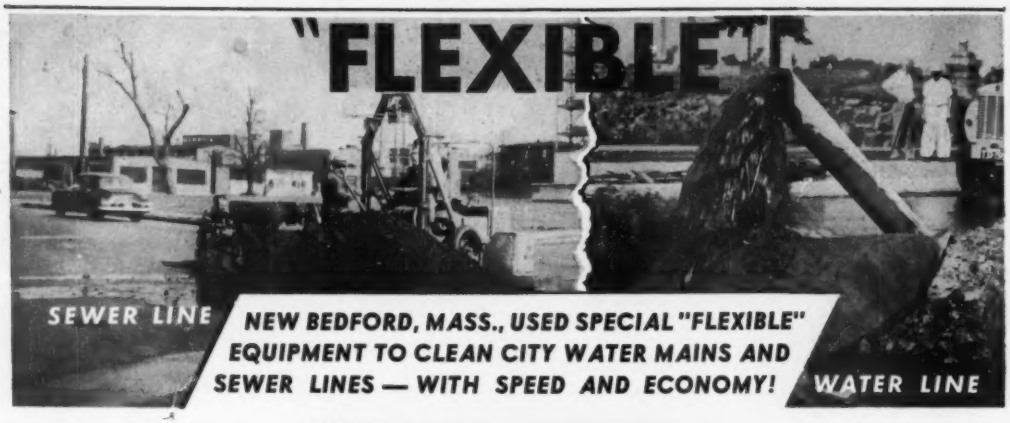
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SEWER LINE
NEW BEDFORD, MASS., USED SPECIAL "FLEXIBLE" EQUIPMENT TO CLEAN CITY WATER MAINS AND SEWER LINES — WITH SPEED AND ECONOMY!
WATER LINE

AMERICA'S LARGEST MANUFACTURER OF PIPE CLEANING TOOLS

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UNDERGROUND PIPE CLEANING CO. — **SEWER-ROD EQUIPMENT CO.**

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LINE MARKER

ECONO-LINER POWER SPRAY MODEL

MARK-RITE EQUIPMENT USED THROUGHOUT WORLD!

Purchasers of Mark-Rite Equipment Include:

Winslow, Arizona
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Bozeman, Montana
Las Vegas, Nevada
Cincinnati, Ohio
The Dalles, Oregon
Knoxville, Tennessee
Fort Worth, Texas
Salt Lake City, Utah

- Quickly paints sharp lines on: Concrete, black top, brick surfaces
- One man operation
- Paints up to ¼ inch alongside fixed objects
- Ideal for marking auto stalls and pedestrian cross walks.
- Can be used for spray stenciling on streets, painting curbs, fire hydrants, etc.

FOR DETAILED INFORMATION WRITE DEPT. A41

UNIVERSAL MFG. & SALES COMPANY
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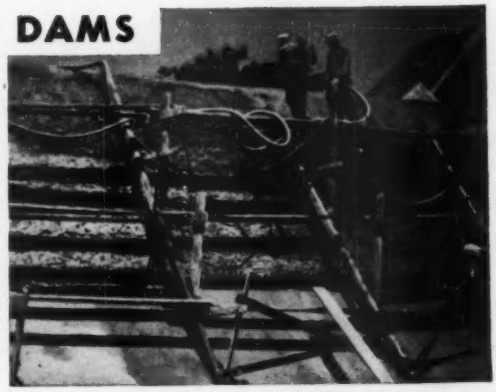
MARK RIGHT . . . WITH A MARK-RITE!

DAMS



repaired speedily with "GUNITE"

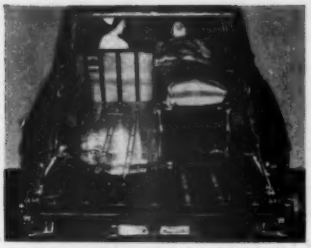
A 4-inch to 6-inch facing of reinforced "Gunite" was applied to the dam shown above which had badly deteriorated. This "Gunite" treatment restored this structure to years of further usefulness.

Let our engineers inspect your dams and give you repair-costs estimates for work done by experienced crews. No obligation. Our operations are nation-wide.

Write for our 48-Page Gunite Booklet

PRESSURE CONCRETE CO.

193 Emmett St., Newark 5, N. J. • 315 South Court St., Florence, Ala.
33 N. La Salle St., Chicago 2, Ill. • Liberty Life Bldg., Charlotte, N. C.



The Chrysler ambulance, which features the newly developed Oriflow shock absorbers and torsion bar sway eliminator.

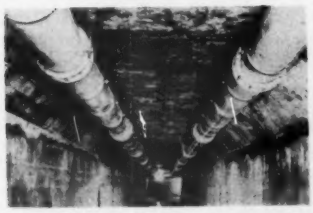
Ambulance Can Carry Two Stretchers

Of interest to muncipalities in search of a versatile ambulance is the new Chrysler model which has the capacity for one or two stretchers, plus the driver and a nurse or an attendant. This machine can also be employed by state police, county sheriffs, hospitals, funeral directors, and used for civilian defense projects and industrial first-aid units.

It has two wide seats to accommodate six passengers, plus a large storage space behind the rear seat. Or, the rear seat can be folded forward to provide a flat, unbroken luggage compartment nearly 10 feet long with the tailgate lowered, leaving room for the driver and two passengers in the front seat.

The Chrysler ambulance has an all-steel body mounted on the standard Windsor chassis of 125½-inch wheelbase. It is powered by the Chrysler Spitfire high-compression 116-hp engine. A smooth ride, free from road shocks or vibration, is assured because of Chrysler's independent front wheel coil springs, tapered leaf rear springs, newly developed Oriflow shock absorbers, and the torsion bar sway eliminator. The Chrysler Division, Chrysler Corp., P. O. Box 1658, Detroit, Mich., will send descriptive folders on request.

Wrought Iron Sewers



Wrought iron pipes, manufactured by the A. M. Byers Co., Clark Bldg., Pittsburgh, Pa., are suspended from the ceiling of this concrete tunnel to carry sanitary sewage in Cleveland's Morgan Run sewer project. Storm sewage is carried by the tunnel itself. The 16-inch outside diameter overhead lines were fabricated from 5/16-inch plate by Morgan Steel Products, Inc., Cleveland, and have a total length of 860 feet.

"More protection -at lower cost to taxpayers with RCA 2-WAY RADIO"

says Chief Radio Engineer
Marshall L. Dull
City of Wilmington, Del.

Headquarters control—dispatches protection to citizens over more than 100 square miles.

Fire fighters get on the scene sooner.

S.P.C.A. give better service.

The police get to the spot in less time.

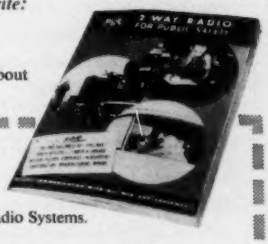
Parkway Police keep parkways safer.

"RCA 2-way radio gets men with 'know-how' to trouble spots—FAST. Their skilled direction in those early precious minutes speeds law enforcement, lowers fire losses—definitely saves money for our citizens."

Wilmington's unique 2-way radio system links all law-enforcement and fire-fighting facilities into one protective network. Two headquarters stations . . . one for regular service . . . one for emergency . . . control 51 two-way radio mobile units (and all fire houses).

Just one instance among hundreds where RCA 2-way radio communication is protecting taxpayers and saving them money. Learn about its value in *your* own operations. Write Dept. P-102, RCA Engineering Products, Camden, N. J. (*In Canada, write: RCA Victor Company Limited, Montreal.*)

Just off the press—new brochure giving vital facts about RCA 2-way Radio for safety.



RCA ENGINEERING PRODUCTS
Dept. P-102
Camden, N. J.

Send me the new brochure on RCA 2-way Radio Systems.

Name_____

Station_____

Address_____

City_____ State_____

RCA RADIO CORPORATION of AMERICA

SINCE May 1948, the Checker Cab Co. of Milwaukee has been giving its drivers a unique reaction test. The results have proved that drivers can stop quicker on concrete than on other pavements.

To make this test, two tiny guns are mounted on the test car—each loaded with a blank cartridge and capsule filled with yellow chalk. Frank Loh, who conducts the tests, rides beside the driver and fires one gun without warning. The exploding cartridge drives the chalk-filled capsule against the pavement, leaving a yellow mark.

The explosion is the signal to stop. When the driver applies the brakes the second gun automatically fires, leaving a second yellow mark. The distance between marks is the number of feet traveled before applying the brakes. The distance between the second mark and the front bumper of the halted vehicle is the number of feet required to stop.

Mr. Loh says, "These tests prove that at 20 miles per hour a car can be brought to a full stop 8 to 10 ft. sooner on concrete pavement."

These tests confirm what millions of motorists learn about the superior stopping power of concrete when they must stop quick in an emergency. Drivers soon learn, too, that they can be more relaxed when driving on concrete because of its other built-in safety features: (1) its gritty surface, which has uniformly high skid resistance, wet or dry, (2) its light color, which reflects more light at night, thereby increasing visibility during the most dangerous driving hours and (3) its freedom from hazardous ruts, bumps and chuck holes.

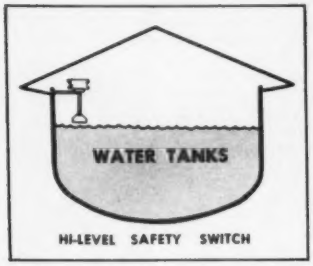
Investigate the many safety features of durable, ***low-annual-cost*** concrete pavement. Write today for your free copy of *"Concrete for Every Traffic Need."* It is distributed only in the U. S. and Canada.

PORTLAND CEMENT ASSOCIATION

DEPT. A4-4, 33 WEST GRAND AVENUE, CHICAGO 10, ILLINOIS

A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work

Automatic Water Level Control



Extra safety is provided for waterworks operators, who have need to control the level of the water tanks and reservoirs and other areas, by the use of the Autocon Hi-Level safety switch. The company explains that this switch is able to operate without floats or electrodes, and needs only ½-inch rise in water level above normal to operate. It is not affected by temperature and is independent of all other controls.

Another product of the Automatic Control Co., St. Paul 4, Minn., is the Autocon Tanktrols for primary booster, and sprinkler systems, fire tanks and tankless booster systems. The firm claims Autocon Tanktrols, with twin bellows design, provide pinpoint accuracy, greater sensitivity, maximum protection, and greater savings, and are employed by cities, towns, villages, commercial houses, and institutions.

The company has prepared two leaflets describing the Hi-Level safety switch and the Tanktrols.

Hyster Expands Plants

An expansion program that will increase manufacturing capacity at least one-third through enlargement of fabricating and machining facilities, is underway at the Hyster Co.'s three plants in Portland, Ore., Peoria, and Danville, Ill.

The assembly building in Portland is being extended to provide more space for assembly equipment and centralization of the plate shop. New production and service equipment also is planned.

The Peoria plant has acquired nearly an entire block south of it on N. Adams Street and will include a new sidetrack of the Rock Island Railroad. Major changes at the Danville plant will be removal of the machine shop to a new building and extending the plate shop to cover a spur of the New York Central.

The company reports that all improvements are pointed toward greatly increased production of Hyster lift trucks, straddle trucks, turret trucks, mobile cranes, and attachments.

THE MODERN LAWN MOWER SHARPENER

CUTS MAINTENANCE COSTS

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LOWER CAPITAL INVESTMENT

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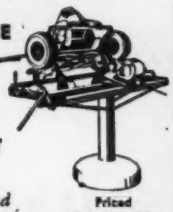

Economically and Quickly Sharpens All Municipal Mowers

Priced $241.50 (less motor)

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling No Extra Attachments Needed

All reel type mowers, from 5-inch edgers to 36 inch power mowers, are quickly sharpened to extreme ends of both left and right twist reel blades. Handle, wheels, roller and motor repair in place when sharpening is in process. Bed knife is sharpened in same brackets that hold mower in grinding position. No extra attachments required. One lever puts mower or bed knife in grinding position. 100% steel construction. Grinding head rides on five ball bearing races. Small, compact, easy to operate. Sharpens wood chisels, joiner knives and planer blades without extra attachments. Skate Sharpener Attachments available.

1/3-hp. G.E. 60-cycle Motors now available—$21.50 extra.

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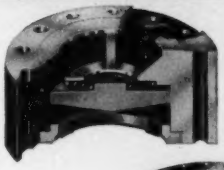
140 N. FAIR OAKS AVE. • PASADENA 1, CALIF.

WILLIAMS-HAGER
flanged
Silent check
VALVES



Wherever Williams-Hager flanged Silent Check Valves are installed, plant maintenance men will tell you their costly water hammer troubles are over. These dependable, durable and compact valves can be placed in your water system in any position, including angular, and will provide maximum protection at all times. They are available for every service in standard pipe sizes from 1" to 20". Why not rid your plant of water hammer *now* . . . get Williams-Hager Check Valves.

Write today for Bulletin WH-100.

CHECK VALVES

THE WILLIAMS GAUGE CO.

Pump Valves . . . Water Gauges . . . Gauge Cocks . . . Steam Traps . . . Pump Governors . . . Feed Water Regulators . . . Water Columns

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SEWER SCOOTER*
* Trademark

Sewers Clean Themselves With a Sewer Scooter

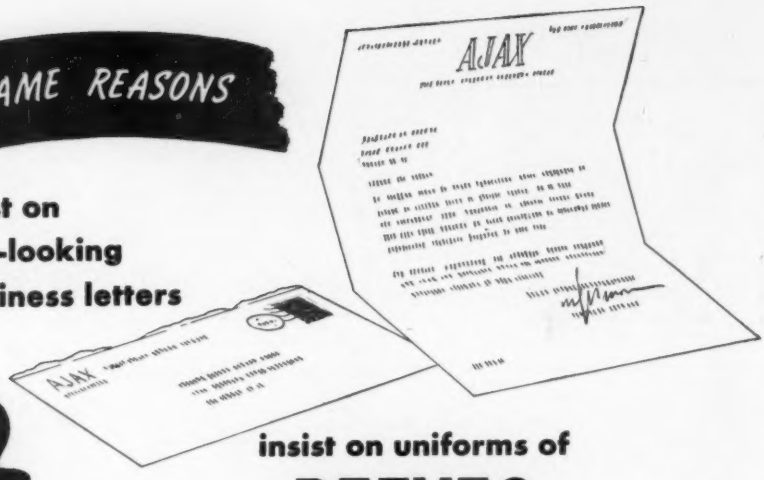
100% self-propelled for 6" to 96" sewers—Is equally effective for all conditions and problems of sewer maintenance—completely cleans sewers of all sediments: rocks, gravel, sand and "hard-to-move" sludge.
Quick and efficient in operation. Investigate today! Ask for Bulletin.

Dealers—Some good territory open

Fitzgerald Engineering Co., Inc.
P. O. Box 289-G,
Coral Gables 34, Fla.

FOR THE SAME REASONS

you insist on
smart-looking
business letters



insist on uniforms of

REEVES QUALITY FABRICS

THEY WEAR LONGER and they stay smart looking—that's why leading companies from coast to coast specify uniforms of Reeves Army Twill, Parade Twill and Reeves Glengarrie Poplin. For these fabrics are made only of fine *combed* cotton yarn . . . Sanforized* to keep their appearance through repeated washings and vat-dyed in colors that are completely fast to sun, water and perspiration.

For greater public approval make sure your men are dressed in crisp, long wearing uniforms of Reeves quality fabrics. Write for full information.

*Residual shrinkage less than 1%

Reeves also makes BYRD CLOTH, REEVECORD, REEVROY CORDUROY, PLAID DENIM and other nationally known quality cotton fabrics.

REEVES BROTHERS, Inc., 54 Worth Street, New York 13, N. Y.

Representatives in: Atlanta • Boston • Chicago • Cleveland • Dallas • Los Angeles • Philadelphia • Portland, Oregon • St. Louis • Montreal • Toronto • Winnipeg

Elected Vice-President of Builders-Providence

John R. Hartley was elected a vice-president of Builders-Providence, Inc., 350 Harris Ave., Providence 1, R.I., at the annual meeting of the board of directors. With the firm for 23 years, the last three of which were as project sales manager, he will continue in charge of engineered project sales in the water and sewage fields, and in the problems of water and waste treatment in various industries.

J. R. Hartley

Mr. Hartley is well known in the fields of water, sewage and industrial waste treatment where he is a specialist in the application of the company's products. He holds membership in the Boston Society of Civil Engineers, the Providence Engineering Society, the American Water Works Association, and the Federation of Sewage Works Association.

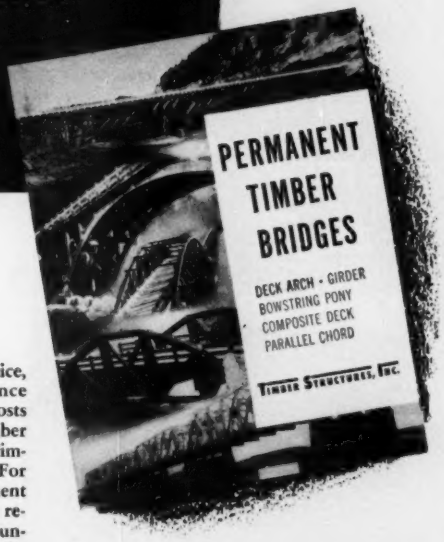
Two-Way Flashlight For Light, For Safety

The Traf-O-Lite, a two-way flashlight, throws a clear white beam through the end and a penetrating red glow through the sides of the lucite tube. This device is employed for traffic control and civil defense, as well as being used as an auto danger and theater ushers' light. It is a product of the Ray-O-Vac Co., 212 E. Washington Ave., Madison 10, Wis.

The Traf-O-Lite consists of a solid, clear, shatterproof lucite rod with red outer surface mounted on the Ray-O-Vac baby chrome spotlight. The firm reports that it is sturdy, dependable, is equipped with a three-position switch with signal button, and has a silver-plated reflector which projects 1,500 candlepower beam.

The company has prepared an illustrated booklet describing its products, among which are the Penlight (actual size of a fountain pen), the Sportsman searchlight which has a three-position switch with a signal button, as well as other flashlights and Penlight batteries. Available are igniton, multiple and telephone batteries, and leak proof flashlight batteries which are sealed in steel. The firm will send descriptive literature on request.

The way to Low Bridge Costs... with permanent bridges of engineered timbers



You get years of service, minimum maintenance and genuinely low costs when you install a timber bridge fabricated by Timber Structures, Inc. For truly these are permanent bridges, designed to remain fully serviceable until after changing traffic conditions have made the site obsolete.

Glued Laminated Members for Dimensional Stability

Primary structural members of Timber Structures bridges are glued laminated timbers, formed of select kiln dried Douglas fir, joined under pressure by permanently waterproof glues stronger than the wood itself. Thus literally "shop grown" to the exact specifications of the designer, these members are not subject to dimensional changes and seasoning action.

Before shipment and erection these members are given an approved preservative treatment for lasting protection against damage by weather and insects. All stressed connections are made with ring connectors or shear plates, assuring maximum strength and durability.

Ask for Literature on Timber Bridges

An illustrated folder has just been published showing the five basic bridge types of Timber Structures, Inc. — deck arch, bowstring truss, parallel chord truss, composite deck and girder. Typical applications are shown, together with detail drawings of each type. A copy of this folder is yours for the asking. Get it from your nearest Timber Structures representative, or fill in and mail coupon.

TIMBER STRUCTURES, INC.
P. O. BOX 3782-X, PORTLAND 8, OREGON
Offices in New York, Chicago, Kansas City, Missouri, Dallas, Texas, Eugene, Oregon, Seattle and Spokane, Washington.
Timber Structures, Inc., of California, Oakland, Calif.
Timber Structures of Canada, Ltd., Peterborough, Ont.
Local Representatives Coast to Coast

TIMBER STRUCTURES, INC.
P. O. Box 3782-X, Portland 8, Oregon
Please send folder on Engineered Timber Bridges to
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The Best Aid to Corrosion Protection is

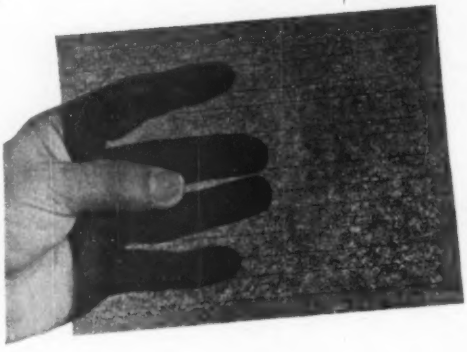
GLASS

Already oxidized — ageless — adapted by nature to offset nature's forces of disintegration

. . . AND THE BEST GLASS IS

OWENS-CORNING
FIBERGLAS

COROMAT* and OUTER WRAP



Parallel reinforcement of Fiberglas *Coromat* Inner Wrap gives *strength* for best protection. Finer fibers and more of them—distributed according to Fiberglas process . . . a Fiberglas specialty . . . provides controlled porosity, even bleed-through, even enamel thickness, and positive anchorage of the wrap.

Made with a core of Coromat, inorganic Fiberglas *Outer Wrap* protects the corrosion protection. Non-wicking action doesn't draw off the rich protective fractions of the enamel or the wrap.

These are the products of the best research and longest experience in glass corrosion protection technique—the *Products of Experience* for your steel pipe . . . OWENS-CORNING FIBERGLAS CORPORATION, Nicholas Bldg., Toledo 1, Ohio. Branches in all principal cities to serve you.

* *Coromat is a trade-mark of Owens-Corning Fiberglas Corporation*

FIBERGLAS . . . ON YOUR PIPE . . . FOR GOOD!

History of du Pont Recorded in Film

Crawford H. Greenewalt, president, and Charles A. Cary, vice-president, (left to right), playing their own roles in the feature-length motion picture, "The du Pont Story." The portrait is of the founder of E. I. du Pont de Nemours & Co.

The highlights of the rich history of E. I. du Pont de Nemours & Co. have been recorded in a feature-length technicolor motion picture entitled "The du Pont Story". The picture was made primarily for showing to the company's employees, 58.4% of whom have been with the company less than 10 years. This does not represent turnover but expansion—tremendous but order diversification, which is the theme of the movie.

The picture opens with the present-day activities of the company, but quickly flashes back 149 years and shows how E. I. du Pont de Nemours, the young French immigrant, got his start. From there on, the administrations of du Pont's 10 presidents form convenient chapters for telling the story.

Henry du Pont held longest presidential tenure, from 1850 to 1889. During this period, came dynamite to share the explosives field with black powder, and the expansion of the company outside Wilmington, Delaware. The company as now known was established by Irenee du Pont who shepherded the dyestuffs venture to ultimate success. Fundamental research started under Lammot du Pont. This brought nylon, rayon, cellophane, and "Duco" lacquers.

Walter S. Carpenter, Jr., ninth president and Crawford H. Greenewalt, present head, enacted their own roles in the film. In fact, when Mr. Carpenter saw the Hollywood duplication of his office, he remarked that he felt so at home that he thought he ought to go to work.

In sum, the picture highlights the 149-year history of the company, emphasizing the policies, practices, philosophies, products, and people.

Servi-Cars are Hot Cakes For Meter Policing

Cities all over the country are using three-wheeled Harley-Davidson police Servi-Cars for car marking, parking-meter checking, and traffic control. Since January 1, 1951, the following cities have ordered them: Birmingham, Ala.; New Brunswick, N. J.; Cincinnati, Ohio; Eau Claire, Wis.; Kitchener, Ont.; Holland, Mich.; Evansville, Ind.; Henderson, Ky.; Monessen, Pa.; Sioux Falls, S. Dak.; Santa Monica, Calif.; Abilene, Tex.; Long Beach, Calif.; Albuquerque, N. Mex.; Ossining, N. Y.; Corpus Christi, Tex.; High Point, N. C.; Lewistown, Mont.; Milwaukee, Wis.; Brantford, Ont.; Baton Rouge, La.; Atlanta, Ga.; Anderson, Ind.; Covington, Ky.; Salina, Kan., and Berkeley, Calif.

Sludge-Free Lubricant To Maintain Motor Graders

The Norgahn Co. of Wausau, Wis., manufactures a lubricating compound called Wingslide, which is a sludge-free lubricant used for motor grader blade turning mechanisms. The firm also recommends it as a lubricant for all outside lubricating needs.

This compound will adhere to the metal, will not mix with water, and its use assures a sludge-free lubrication that permits all turning mechanisms to operate easily with minimum wear. It also is adaptable to truck plow chafing plates as a factor in eliminating friction.

Wingslide, which originally was developed for lubricating snow plow wing uprights, is available in 18- and 45-pound containers.

ROADMASTER
Street Sweeper
WIRE

High Scleroscope Rating
Uniform temper.

Specially processed for high fatigue — against breakage. Long wearing. Conveniently cut and delivered in 100 and 200 lb. boxes. Prompt shipment from stock of all standard sizes.

This gutter broom wire will prove an economy in your service.

"MORE MILES PER BRUSH"

JOHNSON
Steel & Wire Co., Inc.
Worcester 1, Massachusetts
New York Akron Chicago Detroit
Los Angeles Toronto

DO YOU KNOW
that there are more Lyle Street Name Signs serving American cities and towns than those of any other make?

WRITE FOR CATALOG
PRICES AND SAMPLES
LYLE SIGNS, INC.
2720 University Avenue, S. E.
Minneapolis, Minnesota

THE METER THAT HAS EVERYTHING

ACCURACY: Precise timing gives the parker what he pays for; builds confidence.

EASY AUTOMATIC OPERATION: All that's needed is the insertion of a coin—as simple as pushing a button.

EASY MAINTENANCE: Ruggedness and tamper proof features make repairs a rarity. Separate openings for collection and servicing.

WRITE FOR COMPLETE [illegible]

DEPENDABILITY: Sturdiness in every part assures steady operation in all kinds of weather.

EASY ENFORCEMENT: Clear, simple instructions, high visibility of signals make it easy on officers.

STEADY INCOME: Constant operation and easy use maintain steady flow of revenue for the city.

KARPARKS ARE MANUFACTURED BY THE HERSCHEDE HALL CLOCK COMPANY

KARPARK Automatics

KARPARK CORPORATION CINCINNATI 6, OHIO

SEWAGE SLUDGE GAS SAFETY EQUIPMENT

---for SAFE, SURE gas utilization

Completely eliminate fire and explosion hazards! P.F.T. gas safety equipment includes: waste gas burners, flame traps, pressure relief units, gas pressure regulators, pressure gauges, condensate and sediment accumulators. Write for Bulletin 221 for complete details!

P.F.T. PACIFIC FLUSH TANK CO.

Waste Treatment Equipment Exclusively Since 1893

4241 RAVENSWOOD AVE. CHICAGO 13, ILLINOIS

NEW YORK • LOS ANGELES • SAN FRANCISCO • CHARLOTTE, N. C. • JACKSONVILLE • DENVER

Bronze Tablets...

By Cincinnati's Famous Metal Craftsmen

Memorials • Honor Rolls
Portrait Tablets • Signs
Markers • Name Plates

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Tell us what you have in mind and we'll gladly submit suggestions.

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1102 W. 9th St. CINCINNATI 3, OHIO

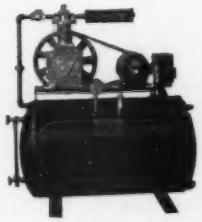
No. IV-APCO

APCO-V-APCO PRIMERS

FOR CENTRIFUGAL PUMPS
AUTOMATIC POWER OR TANK PRIMERS
SINGLE OR DUPLEX UNITS
DUAL DRIVE WITH GASOLINE ENGINE
ALL UNITS ENTIRELY AUTOMATIC

AIR RELEASE VALVES

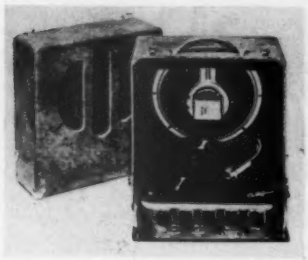
FOR VENTING AIR OR GASES
17 TYPES



No. 2V-APCO

VALVE AND PRIMER CORPORATION 356 WEST HURON ST., CHICAGO 10, ILL.

Portable Three-Speed Transcription Player



A 3-speed, 10-inch turntable is among the features of this new portable transcription player which has a variable speed control.

A new portable three-speed transcription player with variable speed control, believed to be the most powerful sound system yet built into a single carrying case, is manufactured by the Califone Corp., 1041 N. Sycamore, Hollywood, Calif., according to Robert G. Metzner, president.

The new unit will handle from 7-inch to 17¼-inch recordings and is adjustable for all types of speeds 33 1/3 revolutions per minute, 45 rpm, and 78 rpm.

Califone's patented Varipole speed control permits a gradual adjustment of turntable speed from 25% below normal to 10% above normal. The unit features two heavy duty Alnico 12-inch speakers; 25-foot extension cables on each speaker; power output of 16 watts, undistorted 24 watts peak; push-pull 6L6 amplifier; two high impedance microphone inputs with separate controls, and mixer controls from microphone and phonograph.

Deep-Well Turbine Pumps

Drive or head assembly, column and shaft assembly, and bowl assembly or pumping element are the three principal components of the Deming vertical turbine pumps. These components are manufactured in a wide range of standard sizes. Pumps are available for wells from 4 to 16 inches, or larger in a capacity range of from 15 to over 3,000 gallons per minute.

Produced by the The Deming Co. of Salem, Ohio, the pumps have impellers that are easily adjustable, an accessible stuffing box, water lubrication, heavy drive pipe column couplings, separate headshaft, and flanged head construction.

These pumps are used for water supply and high service pumping. Originally designed for pumping water from deep wells, their performance and adaptability has extended their applications for handling various liquids, pumping from tanks, sumps, reservoirs, rivers, and other sources.

They are employed by industries, mines, laundries, dairies, municipalities and irrigation farmers, as well as by other groups.

Trouble-Free Water Meters

Water meters, made by the Calmet Meter Division of the Well Machinery and Supply Co., Inc., Fort Worth, Texas, have Calmet frost-proof bolts to prevent damage from freezing. The Calmet oscillating-piston meter is of the positive displacement type. It measures water by filling and emptying the measuring chamber at each oscillation of its piston. The piston is semi-floating and perfectly balanced.

The company claims that this device, constructed of special alloy bronze, is designed to resist wear, rough handling and corrosion, and for quick and easy inspection or repair.

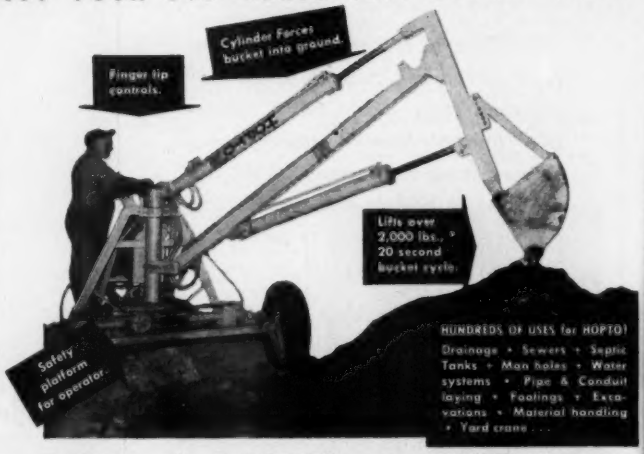
The company issues a descriptive literature to those interested in these meters for their water-works projects.

Legion of Honor Membership

John Van Nostrand Dorr, chairman of the board of directors of The Dorr Co., Barry Place, Stamford, Conn., has been made a member of the Legion of Honor of the American Institute of Mining and Metallurgical Engineers in recognition of his 50 years of service as a member.

This citation took place Wednesday, February 21st, in St. Louis, Mo., at the 171st annual meeting of the Institute.

CUT YOUR JOB COSTS THIS BETTER WAY!


Cylinder forces bucket into ground.
Finger tip controls.
Lifts over 2,000 lbs., 20 second bucket cycle.
Safety platform for operator.
HUNDREDS OF USES for HOPTO!
Drainage • Sewers • Septic Tanks • Man holes • Water systems • Pipe & Conduit laying • Footings • Excavations • Material handling • Yard crane . . .

DIG faster...SHOVEL easier...LIFT higher... with low-priced, hydraulic HOPTO!

Here's the unit that's saving money, slashing expenses for contractors and municipalities! Low first cost, minimum upkeep and big 15-30-yard hourly capacity make HOPTO a really profitable producer. Digs down over 9 feet . . . then lifts up 14 feet to load the highest truck. No counter weights . . . no swing clearance. Full 180° swing. Three types of buckets, all with replaceable teeth. Complete control for dipper stick, boom and swing. Operates from tractor, truck or jeep power take-off. Easily transported from job to job.

WRITE FOR FREE FOLDERS!

COMPLETE SPECIFICATIONS AND PROFIT FACTS ON HOPTO AND FULL TRACK TRENCHERS WILL BE MAILED AT ONCE.

FOR BIG JOBS IN ANY SOIL... THE BADGER FULL-TRACK TRENCHER

Dig trenches anywhere, anytime with this Badger Full Track Trencher. Sewer, water, gas lines—construction work, conduit laying . . . all jobs go faster, easier. Digs 7" to 24" trench—down to 11 feet deep. Reversible spoil conveyor. Optional grade holder. Terrific work capacity and advanced design put this Badger Trencher at the head of the field.

A COMPLETE LINE OF BETTER TRENCH EXCAVATORS AND DIGGERS SELF-PROPELLED OR POWER TAKE-OFF FOR CONSTRUCTION, MUNICIPAL USE.

BADGER MACHINE CO.
WINONA, MINNESOTA DEPT. D

You Need MORE Than *One Man* Traffic Control!

Traffic rules and regulations are the result of careful study, analysis and planning. There should be no "hit-or-miss" attempts at solving traffic control at busy street intersections, at the approaches to bridges and tunnels, and on crowded highways to and from terminals and airports.

Day-to-day checking and careful study of peak hours require tedious recording of many details—all of which can be quickly and accurately tabulated by use of a Traffic Control Denominator.

This easy-to-operate and moderately priced device is available in a single unit Hand Tally Denominator as well as in machines from one to 180 units—to meet your specific requirements.

Let The DENOMINATOR solve your traffic problems! For detailed information write Dept. 2-TC.

THE *Denominator Company*, INC.
261 BROADWAY, NEW YORK 7, N. Y.
Manufacturers of Tabulating Machines for over 35 years

GOLDAK'S value *plus!*

THE *Dualtronic* COMBINATION PIPE LOCATOR and LEAK DETECTOR

Since first introduced, the "Dualtronic", has met with instant success with Municipalities and Utilities throughout the world, because of the time and labor savings effected by one instrument doing the work of two so efficiently and effectively. Ruggedly built! Lightweight! One man operation! The "Dualtronic", is the answer on how to cut costs 50%!

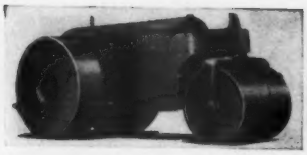
Proven Ability!

GOLDAK
FEATHERWEIGHT
MODEL 87
PIPE LOCATOR

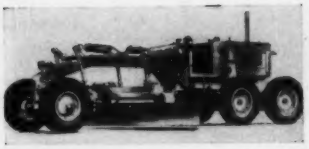
Guesswork eliminated. Pin-point location of pipes, mains, gates, tees, etc. One man operation, total weight 11 lbs! Strong, positive location signal guaranteed by Licensed circuits and Microtuning, exclusive with Goldak. Lasts a lifetime, guaranteed performance. Write for FREE literature!

GOLDAK
PIPE LOCATORS

1544 W. Glenoaks Blvd.
Glendale 1, California



The new variable weight, Chief, three-wheel roller.



This motor grader has a constant mesh type of transmission.

Variable Weight Roller; New Motor Grader Model

More help for the Street Department is coming from The Galion Iron Works and Mfg. Co., Galion, Ohio. An improved, variable weight, Chief, three-wheel roller is being produced in a range of sizes from 6 to 12-ton weights, and the No. 104 model motor grader is being manufactured which has the new Galion transmission, of the constant mesh type, designed for heavy-duty motor grader operation.

The firm reports that the new roller has an extra-rugged transmission and spur gear final drive, cab-controlled differential lock, heavy-duty clutches, hydraulic steering, and heavy-duty gasoline or diesel engine. The steel drum rolls can be filled with water ballast to obtain a wide range of compression weights varying from 2 to 3 additional tons—depending on the size of the roller.

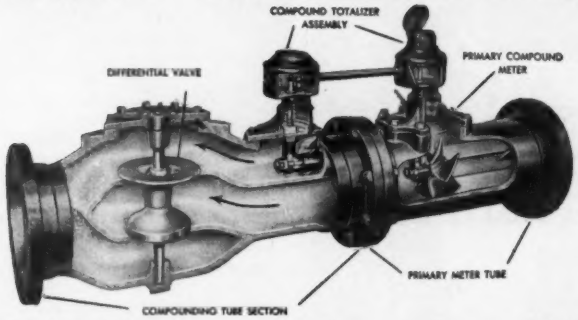
The short, compact, and sturdy transmission of the No. 104 motor grader permits smooth, easy gear shifting without clashing of gears. Only one lever is needed for all shifting, forward or reverse. Six overlappng forward speeds provide a range of 1.1 to 20.1 mph.

A. O. Smith To Sell More Welding Machines

The new welding equipment sales manager of A. O. Smith Corp., Milwaukee 1, as of January 1, 1951, is A. G. Hendrickson. Division Manager L. T. Hickey says that the appointment of Mr. Hendrickson marks A. O. Smith's increased emphasis on marketing a line of welding machines ranging from 180 to 60 amperes as well as other units for repair-shop use.

A. G. Hendrickson

SPARLING MAIN-LINE METERS



COMPOUNDS

For Flow-Ranges as Wide as

1 to 125

Quotations and Bulletin 311 come at your request.

Where flows vary over a very wide range, measurement by Sparling Compound Meters is the answer! Even at high flows the pressure drop seldom reaches 3 psi through Sparling Compounds for mains 6-inch to 36-inch! And there is only one Totalizer to read—with no sharp cutover point.

Sparling Compounds are widely used in autometered chemical feeding operations.

See this Compound at the Miami Convention.

SPARLING METER COMPANY
INCORPORATED

LOS ANGELES 54.....Box 3277
CHICAGO 8.....1500 South Western Ave.
SEATTLE 1.....1932 First Avenue
NEW YORK 17.....101 Park Avenue
626 Broadway.....CINCINNATI 2
6 Beacon Street.....BOSTON 8
726 Reserve Loan Life Bldg.....DALLAS 1
66 Luckie St. N.W.....ATLANTA 3

Since 1885

Patented Discharge Louver

of the GRUENDLER

Sewage Shredder

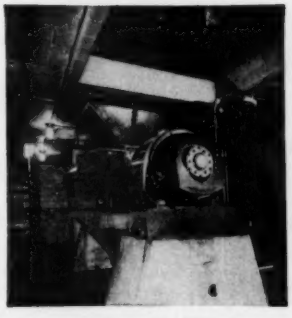
Does It...

Q. What is the Discharge Louver?

A. The patented Louver is an ingenious Shredder-Grate Bar installed in the discharge of the unit.

Q. What will it accomplish?

A. Enables the shredder to disintegrate larger quantities or rag stock with ease along with normal run of sewage.



NOW sewage wastes, regardless of rag stock content, can be thoroughly disintegrated for even sewage flow. No clogging . . . less power . . . no costly maintenance.

BULLETIN SG-10 and names of Municipalities now operating with the Gruendler Sewage and Garbage Shredders, sent on request.

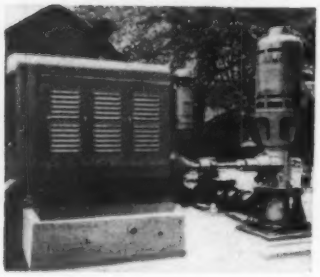
GRUENDLER

CRUSHER and PULVERIZER CO.

2919 North Market

St. Louis 6, Mo.

24 Hour
POWER
Service



JOHNSON
Combination DRIVES

CONTINUOUS WATER SUPPLY . . . protects the public health and reduces fire hazard.

FLOOD DAMAGE . . . insures 24 hour operation of drainage pumps in any emergency.

RESERVE POWER . . . will transmit additional power to meet emergency requirements.

SEWAGE . . . the ideal Drive for continuous 24-hour constant service.

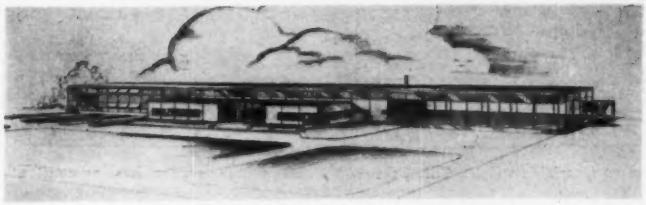
ADAPTABLE . . . available in a number of sizes, types and ratios to meet varied application.

WORLD WIDE ACCEPTANCE . . . in recognition of dependable service, economy of operation and maintenance. Hundreds in use by municipalities.

INVESTIGATE NOW . . . get the facts on the Johnson Right Angle Gear Drive. Send for illustrated catalog.

PHOTO: Installation at Red Bank, New Jersey. Courtesy Layne-New York Company.

JOHNSON GEAR
AND MANUFACTURING CO.
"45 years of Engineering Service"
8th & Parker Streets • Berkeley 10, Calif.



Architect's sketch of the new million dollar plant at Sherman, Texas, for the Line Material Co., Milwaukee 2, Wis.

Million Dollar Plant At Sherman, Texas

Plans for a million dollar fibre pipe plant at Sherman, Texas, have been announced by J. M. Van Vleet, vice-president of manufacturing of the Line Material Co., 700 W. Michigan St., Milwaukee 2, Wis. The city, with a population of 24,000, is located 62 miles north of Dallas near the Texas-Oklahoma border.

Mr. Van Vleet reports that building on the 68 acre tract was begun in February and that the new plant will employ 80 persons when production is in full swing.

Designed by Milwaukee architect, Maynard Meyer, the plant will be a highly mechanized manufacturing unit with 30,000 square feet of floor space, which will also include a modern air-conditioned office building, warehouse, and power plant.

The company, a McGraw Electric Co. Division, has nine other plants at South Milwaukee and Barton, Wis.; Kansas City, Mo.; Birmingham, Ala.; Zanesville, Ohio; East Stroudsburg, Pa.; Oneida, N. Y., and Toronto, Canada. General offices are at 700 W. Michigan St., Milwaukee, Wis.

Names Distributors

The Cleco Division of the Reed Roller Bit Co., 5125 Clinton Drive, Houston, Tex., has announced the appointment of the Olson Equipment Co., 2930 Blaisdell Ave., Minneapolis, Minn., as distributors of Cleco products in that area.

In addition to handling the full line of Cleco pneumatic tools, the Olson firm will maintain complete stocks of Cleco parts and accessories for customers in its territory.

The Cleco Division has been associated with a line of pneumatic tools for over 50 years.

AMONG WATER WORKS MEN...

THE
ELLIS PIPE CUTTER
is *Best*
FOR CUTTING
LARGE SIZES
OF PIPE

No. 01 Cuts Pipe 4" to 8" | No. 1 Cuts Pipe 4" to 12"

Write for circular and price list No. 33AC. on our complete line of pipe cutting tools.

ELLIS & FORD MFG. CO.
FERNDALE 20, MICH.

Gordon Park Swimming Pool, Milwaukee, Wisconsin, painted with Phelan's Hydroflex.

Paint Your Pool with Rubber!
Phelan's HYDROFLEX Rubber-Base Finish
Gives Beauty and Low-Cost Upkeep

Elasticity and durability are built into this special rubber-base finish. It stands up and keeps its beautiful color under tropical sun or winter frost. Easy to clean because slimy algae can't cling to its satiny tile surface.

Pool owners from coast to coast get two season's wear from Phelan's Hydroflex—investigate now!

FREE! Folder showing COLOR SAMPLES and full information. Write
PHELAN-FAUST PAINT MFG. COMPANY
St. Louis 11, Mo. Since 1902

Phelan's
HYDROFLEX
RUBBER BASE Swimming Pool Finish

Talks on Puerto Rico's Water, Sewage Problems

Norman E. Tucker, general sales manager of the Refinite Corp. of Omaha, Neb., was guest speaker on February 16th before the Puerto Rican Institute of Engineers, in San Juan, Puerto Rico. Answers to Puerto Rican water and sewage disposal problems was the subject discussed in his two papers entitled "Diatomite Filtration Applicable to Puerto Rican Water Problems" and "The Economic Answer to Puerto Rican Sewage Disposal Problems."

N. E. Tucker

Enthusiastic comments on Mr. Tucker's papers were given by Senor Rafael A. Gonzales, Puerto Rican Industrial Development Co., and Senor Juan G. Figueroa, Chief Sanitary Engineer of the Puerto Rican Dept. of Health.

Carlos J. Feliu introduced Mr. Tucker. The Feliu Industrial Machinery, Inc., served luncheon in honor of its announcement as the Puerto Rican representatives of the Refinite Corp.

The Refinite Corp. manufactures water treatment equipment for domestic and industrial uses.

Water Analysis

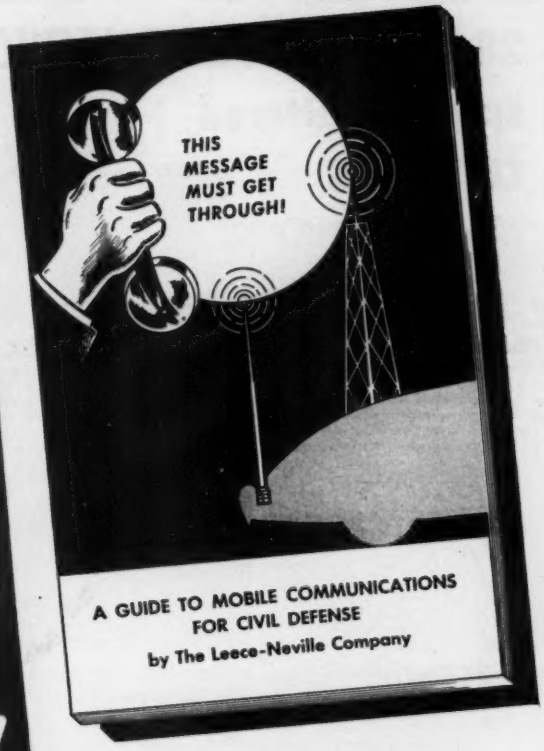
The Hellige Aqua tester is modern apparatus for precise analysis of water, sewage, industrial waste, and hydrogen ion measurements. Specially designed for use with Nessler tubes of 200 millimeter viewing depth, it is of particular value in the determination of the color of water, and in chemical tests involving minute quantities of the constituents. The apparatus also is recommended for pH measurements of weakly buffered waters, as satisfactory color intensity is obtained by adding only 1/16 of the amount of indicator solution required for tubes of 13 mm viewing depth.

Hellige, Inc., 3718 Northern Boulevard, Long Island City 1, N. Y., is the manufacturer of this device. Others of its products are the Hellige Simplex testers which are inexpensive, yet accurate and permanently reliable comparators for hydrogen ion (pH) measurements, bromine and chlorine determinations, and the pocket and standard comparators, versatile instruments for accurate pH measurements and water analyses.

J. A. Voland Dies

J. A. Voland, president of the Golden-Anderson Valve Specialty Co., 2093 Keenan Bldg., Pittsburgh 22, Pa., died March 10 at his home in West View, Pa. He had been inactive for the past year and a half.

Mr. Voland joined Golden-Anderson in 1913 and assumed the presidency in 1934.



JUST PUBLISHED . . .

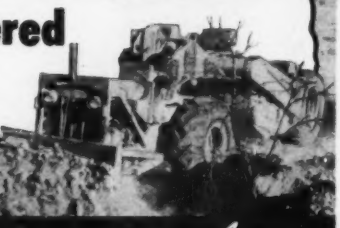
Send for your free copy

In the interest of Civil Defense, Leece-Neville has prepared and published a Mobile Communications booklet. Addressed primarily to Civil Defense Directors, its contents should interest all who are concerned with this important effort. A free copy of the 16-page booklet is available to anyone connected with Communications, Public Protection, or Civil Defense.
Just write Dept. 14, The Leece-Neville Company, Cleveland 14, Ohio.

Quality Electrical Equipment for over Forty Years

Leece-Neville

28 m.p.h. D TOURNAPULL speeds scattered CITY JOBS



Spreads, compacts, covers garbage

As garbage is trucked in, versatile 122 h.p. Tournapull, with Bulldozer blade, spreads and dozes it into place on city landfill disposal dump. Machine's normal travel, on big rubber tires, back and forth in trench, solidly compacts refuse. Garbage is sanitary-sealed by: (1) dozing dirt down from trench walls, or (2) hauling in dirt as Tournapull excavates next parallel disposal ditch. On extra jobs, 28 m.p.h. mobility on rubber lets Tournapull drive anywhere, any time, over city streets ... no waiting for trucks, no loading delays.

Grades city streets, subdivisions

Working at Royal Oak, Mich., D Tournapull moved 25,000 yds. grading streets and leveling subdivision site. On 300' to 500' one-way hauls, rig self-loaded 6½ loose yards in 1 min., delivered an ave. of 20 loads per hour. One-man operation cuts costs.

Handles maintenance jobs

Fleet of 3 Tournapulls handled 4 jobs 55 miles apart near Madison, Wis. ... all in 6 days. On work-and-run schedule, high-speed "D's" (1) cleaned drainage ditches, (2) graded village streets, (3) filled mud holes with sandy gravel, and (4) prepared sub-base for new grade.

Widens, straightens roads

Widening and straightening 2 miles of heavily-traveled Lake Shore road in Cleveland, Ohio, two 7-yd. "D's" moved 50 loads of sandy top soil 350 ft. hourly. Soft-cushion tires and excellent maneuverability permitted working over pavement without interrupting traffic.

In winter, plows, removes snow

Tournapull works year 'round. Working at 20° below zero at Cooperstown, N. D., this "D" plowed through 2 to 6-foot crusted drifts, at speeds ranging from 6 to 11 m.p.h. During summer, rig handles road maintenance, digs drains, trenches, water reservoirs, etc.

Ask your LeTourneau Distributor for complete facts

Mail Today to:

R. G. LeTOURNEAU, Inc., Peoria, Illinois

Please send us more information on 28 m.p.h. D Tournapull to be used for:

.....

NAME .....

TITLE .....

DEPARTMENT .....

CITY, STATE .....

LETOURNEAU TOURNAPULLS

MORE WORK PER HOUR WITH RUBBER-TIRED POWER

Manages Pump Division

T. E. Woodruff has advanced from assistant manager to manager of the pump division of Fairbanks, Morse and Co., 600 S. Michigan Ave., Chicago 5, Ill. He succeeds D. T. Johnstone, who has become pump department manager of the firm's San Francisco branch office.

T. E. Woodruff

Orren S. Leslie has been named manager of the Beloit, Wis., works, it was reported by Robert H. Morse, Jr., president of the company. He replaces Henry M. Haase, who resigned.

For several years, Mr. Woodruff was manager of the concern's pump department in St. Louis.

Mr. Leslie was with the electromotive division of the General Motors Co. for 22 years and was plant manager until his recent change.

Fairbanks, Morse and Co., manufacturer of pumping equipment, announces a new submersible pump. It is a self-priming, deep well pump installed below the water level; it is easy to install by added pipe lengths to the depth of the water; it is water-cooled, water-lubricated, self-priming, and requires no jets, rods or shafts

The machine is designed to deliver high capacities at settings in excess of 70 feet with well diameters of 4 inches and larger. No suction line is required and no horsepower spent in turning long shafts, raising lengths of rod or cycling water through jets.

The motor and pump are assembled in a tubular frame and the entire unit is installed in the well below pumping level. The motor embodies a sealed rotor and stator, and is water-lubricated and water-cooled. Fairbanks, Morse and Co. describes its new submersible pump in a descriptive bulletin, ADB590-1.

Pipe Coatings, Roofing Plant

Koppers Co., Inc., Pittsburgh 19, has taken an option on 158 acres of land at Fontana, Calif., and contemplates construction of a plant for making enamel pipe coatings and roofing materials, it was announced by Fred C. Foy, vice-president and general manager of Koppers' Tar Products Division. He said that the site is adjacent to Kaiser Steel Co., and his firm plans to use pitch made from tar obtained from Kaiser's coke ovens, processing it into high-grade enamels for pipe coatings and various types of roofing materials.

Spark Plugs for Municipal Plants

Of interest to operators of municipal power generatng and sewage disposal plants are heavy-duty spark plugs manufactured by The B. G. Corp. These spark plugs, with their platinum electrodes and built-in-resistors, are capable of operating over long periods without maintenance.

For those interested in the advantages of low fire hazard, a complete line of spark plugs is available. Through use of low-fire-hazard spark plugs, chance explosions or fires on the engine caused by the spark snapping over on the outside of the spark plug are eliminated.

Television interference of growing importance can also be largely eliminated through the use of a proper ignition system and low-fire-hazard spark plugs.

The B. G. Corp., 136 W. 52nd St., New York 19, N. Y., on request, will send full details.

Road Builders' Association Elects Officers, Directors

Thirteen officers and directors were elected to the American Road Builders' Association, International Bldg., Washington 4, D. C. The results were announced March 13th at the Association's annual meeting that was held this year in Milwaukee, Wis.

Paul B. Reinhold, president, Atlas Equipment Corp., Pittsburg, was elected president to succeed Colonel Enoch R. Needles, New York consulting engineer.

District vice-presidents include: Charles M. Noble, Chief Engineer, New Jersey Turnpike Authority, Trenton, N. J.-Northeastern; Charles W. Smith, president, Smith Engrg. & Constructon Co., Pensacola, Fla.,-Southern; W. A. Roberts, president, Allis-Chalmers Mfg. Co., Milwaukee, Wis.,-Central, and A. Diefendorf, head, Dept. of Civil Engrg, University of Utah, Salt Lake City, Utah,-Western. Renamed treasurer was Jennings Randolph, assistant to the president of Capital Airlines, Inc., Washington, D. C., and a former West Virginia Congressman.

Seven directors elected were: Edgar J. Buttenheim, president, *Contractors and Engineers Monthly*, New York, N. Y.; J. N. Robertson, Director of Highways, Washington, D. C.; Raleigh W. Gamble, Superintendent, Bureau of Street Construction and Repair, Milwaukee, Wis.; Otto S. Hess, engineer-manager, Kent County Road Commission, Grand Rapids, Mich.; Howard L. Way, Highway Commissioner, San Bernardino County, San Bernardino, Calif.; A. E. O'Brien, executive secretary, Associated Pennsylvania Constructors, Harrisburg, Pa., and Murray D. Shaffer, general sales manager, Buffalo-Springfield Roller Co., Springfield, Ohio.

The Association's committees and other groups named officers and directors.

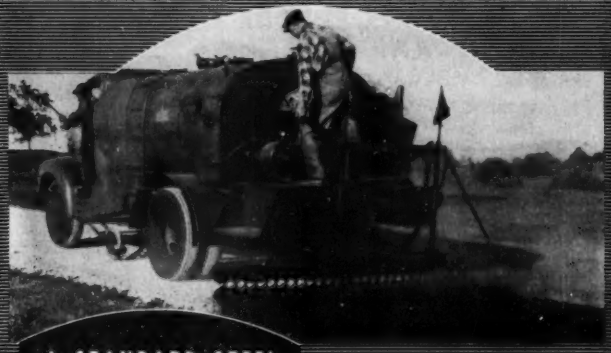
Ryerson Department Manager

John R. Fennie has been appointed manager of the Tubular Products Department of Joseph T. Ryerson & Sons, Inc., steel distributors, Los Angeles, Calif., it has been announced by T. L. Kishbaugh, plant manager.

Mr. Fennie heads the department responsible for merchandising tubular products, including seamless and welded mechanical tubing, pressure tubing, hydraulic cylinder, and line tubing, and structural tubing.

The Ryerson company, which has its headquarters in Chicago 80, Ill., has a group of technically trained men in charge of its products sales departments.

NO TIME LOST!
LOADING OR LAYING ITS LOAD



A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to the Highest Standard

Standard Steel Works NORTH KANSAS CITY, MO

Check
YOUR LIGHTING NEEDS
Now!
IS YOUR STREET LIGHTING UP TO PAR?
HOW ABOUT YOUR PARK AND PLAYGROUND LIGHTING?
DO YOUR TRAFFIC LIGHTS NEED AN OVERHAUL?
HOW DOES YOUR AIRPORT RATE FOR NIGHT FLYING?
While it's still possible to obtain Equipment
...CONSULT WITH
Revere
ELECTRIC MFG. CO. CHICAGO, U.S.A.
FOR COMPLETE INFORMATION AND RECOMMENDATIONS
WHITE-WAY PYLON-LITES
for your boulevards and business districts
You name the problem—
We'll send the Literature!
Single and Double Arm—One Piece Standards, also a complete line of Luminaires
Open and Enclosed Floods for Playgrounds
A New Kind of Safety Island Lighter
Airport Runway Floods, Gate Markers, etc.
REVERE ELECTRIC MFG. CO.
6015 BROADWAY
Indoor and Outdoor Lighting Equipment for Every Need
CHICAGO 40, ILL.

Company Director

L. A. Dixon was elected a director of the Rockwell Mfg. Co., Pittsburgh 8, Pa., at the last board meeting.

L. A. Dixon

Mr. Dixon has been a vice-president of Rockwell's meter and valve division since 1948, and before that was president of the Pittsburgh-DuBois Co., which is now a division the Rockwell firm

W. F. Rockwell, Jr., president, has reported the appointment of Paul A. Wick as assistant to the president.

Mr. Wick joined the company's legal department in 1946, and served as assistant secretary from 1948 to the time of his present appointment.

Cushioned Water Valves

Water hammer becomes less of a problem when lines are equipped with cushioned water-pressure valves manufactured by the Golden-Anderson Valve Specialty Co., 2093 Keenan Ave., Pittsburgh 22, Pa. *Bulletin* No. W-3 describes this product used to protect water lines where high initial pressures would cause serious damage to distribution mains. Its sensitivity enables it to maintain a uniform predetermined delivery pressure. Because of its drop-tight construction, it is particularly suited for dead-end service, such as fire protection and sprinkler systems.

Furnished in sizes from 2½ through 24 inches for pressures of from 125 to 400 pounds, the valves are fitted with renewable cups and seat washer, eliminating metal-to-metal contacts.

The Golden-Anderson cushioned single acting non-return valves (reported in *Bulletin S-2*) are furnished with extra-heavy non-corrosive trim throughout. Each moving part is well guided and no automatic moving part contacts a corrosive part during operation. This type opens when the boiler pressure comes up to header pressure, and closes if boiler pressure decreases below header pressure.

Pettibone Mulliken Buys Rome Grader Division

Announcement has been made by E. J. Seifert, president of the Pettibone Mulliken Corp., 4700 W. Division St., Chicago, Ill., of the purchase of the Rome Grader Divsion of the Union Fork and Hoe Co., Rome, N. Y.

For the present, the Rome plant will continue to manufacture the four sizes of Rome graders. However, the Chicago plant of Pettibone Mulliken will begin to manufacture, distribute, and service all sizes.

Mr. Seifert reports that most of the key personnel of the divsion will continue.

Hydraulic Unit Changes Truck and Plane Tires

Demonstrating operation of the new Tirematic, hydraulic tire changer.

A hydraulic tire changer, designed for removing heavy aircraft tires and the removal of tires from truck rims and contractors' equipment, is manufactured by Dixie Tallyho, Inc., Fairburn, Ga. Hand-operated, the unit can be used in the shop and in the field.

The company declares that 18 tons of pressure can be exerted by the slight movement of the hand-operated pump. Tirematic manual equipment is designed for large forward drop center aircraft wheels. These units are adjustable to all tire sizes. A special dolly is made so that one operator can change the tire or remove the wheel for brake service.

Dixie Tallyho states that this machine will remove the toughest tire from rusty rims.

Generator Set Powered By Water-Cooled or Air-Cooled Diesel

The Kato Engrg. Co. of Mankato, Minn., has announced a new range of small diesel belt-driven generator sets from 2½ to 10 kilovolt-ampere. Kato has adopted the Petter AV and B type diesel engines throughout. The 5-kva 115/230 volt single phase 60-cycle set is powered by a Petter AV2 two-cylinder engine which has a displacement of 67.6 cubic inches and develops 10 horsepower at 1,500 revolutions per minute.

The 2½ and the 5-kva sets can be powered by either a water-cooled or an air-cooled diesel. The engine can be easily started manually, but electric starting is available, if preferred. Kato provides an 18-volt d.c. crank-winding as standard in its generator.

Moto-Mower Officers

M. S. Ramsey was elected president, and Henry A. Fielding, vice-president and treasurer of The Moto-Mower Co., 4600 Woodward Ave., Detroit 1, Mich., at a meeting of the board of directors.

Mr. Ramsey, one of the original employees of the firm begun in 1919, had been vice-president and general manager. Mr. Fielding was secretary since 1936.

The company, a pioneer in the power mower industry since 1919, is putting a complete line of hand mowers into production in its new plant in Richmond, Ind.

M. S. Ramsey **H. A. Fielding**

HERE IS THE MACHINE THAT HAS REVOLUTIONIZED CONCRETE SAWING

NEW Self-Propelled CONCUT CONCRETE SAW

CONCUT

THE GREATEST NAME IN CONCRETE SAWS

Today, concrete sawing is *big business!* . . . and the Self-Propelled CONCUT is the machine to handle this business *faster, easier* and *cheaper.*

The Self-Propelled CONCUT brings a new high in efficiency for all of your concrete and asphalt sawing jobs. The Self-Propelled feature, the Finger-Tip control, the exclusive Lever Lock are some of the engineering features, which mean substantially lower blade costs . . . virtual elimination of operator fatigue and fewer manhours on the job.

● *More and more cities are specifying "sawing before breaking." Contractors and engineers are becoming increasingly aware of the advantages and long-range economy of "sawing before breaking," wherever concrete or asphalt is removed.* • *NOW is the time to get full details on the Self-Propelled CONCUT . . . Write for Bulletin 12 today!*

CHECK THESE BIG CONCUT FEATURES

SELF-PROPELLING . . . virtually operates itself, gives you anti-fatigue sawing, longer blade life and fewer manhours on the job.

FINGER-TIP CONTROL . . . Spindle speed tachometer, water pressure gauge, transmission control lever, motor shut-off and motor throttle located on dash panel directly in front of operator.

LEVER LOCK . . . enables operator to remove blade from cut, then lower to same cutting depth without changing adjusting screw.

CONCRETE SAWING EQUIPMENT, INC.

15 North Oakland Avenue, Pasadena 1, California

Speed jobs with this quick, simple way to install underground pipe. With the GREENLEE *one man* pushes pipe under obstacles . . . no tearing up of pavement, floors, lawn . . . eliminates extensive ditching and tedious backfilling! Two models and special power pump to fit your various jobs. Write for facts today.

GREENLEE

Greenlee Tool Co., 2024 Columbia Ave., Rockford, Ill.

WANTED TO BUY DIESEL ENGINES

Also

A. C. & D. C. Generators

TURBINE GENERATORS
LARGE AIR COMPRESSORS

Motor Generator Sets
Rotary Converters
LARGE TRANSFORMERS
LARGE ELECTIC MOTORS
Welding Generators
Bulldozers, Pumps
Cranes and Hoists
and other heavy construction equipment. Also need large sizes pipe, Electric Cable and Machine TOOLS.

Write AIRMAIL—give as much data as you can including age and photos if possible.

HARRY JAWITZ

813—82nd St.
Miami Beach 41, Florida
Phone MIAMI 86-4869

Men who attended the sales meeting conducted by the Johnston Pump Co., at Los Angeles are shown above. Left to right are: Bill Walmsley, Lyle Pritchard, Ned Rowland, Ralph Linderman, W. G. Magruder, Jack Diemas C. R. Spencer, Perry Brown, Tommy Sewell, John Maple, Jim Wyche, Ivan Webster, H. W. Gilliland, Tom Simmons, M. S. Myer, K. G. Lundie, and R. E. Rolling

Company Holds First Annual Sales Meeting

New products, engineering, manufacturing, credit and procurement, and sales and advertising problems were among the subjects discussed at the first general three-day sales meeting held by the Johnston Pump Co., 2324 E. 49th St., Los Angeles, Calif.

The conferences took place at the Biltmore Hotel, Los Angeles, and were attended by the firm's district managers from the United States and Canada. K. G. Lundie, vice-president in charge of sales, reported that annual conferences will be held in the future.

Soda Ash in 64 Pages

Soda Ash—used in water softening—is by far the oldest of the major industrial chemicals in use today. Its history goes back at least 5,000 years, but our detailed knowledge covers only the last three centuries.

As the modern demand for soda ash grew, several companies entered the field, one of them being Columbia Chemical Co., which was established in 1899 largely through the efforts of John Pitcairn, one of the founders of the Pittsburgh Plate Glass Co. The original purpose of Columbia—which in 1920 became a division of the Pittsburgh company—was to supply high quality soda ash to the glass industry. Soda ash production is, through economic necessity, a large-scale operation, with only five companies, operating nine plants, in this field.

A comprehensive story of *Soda Ash* may be obtained in the form of a 64-page illustrated booklet of that title published by the Pittsburgh Plate Glass Co., and its subsidiaries, Columbia Chemical Division and Southern Alkali Corp., all at Fifth Avenue, Bellefield, Pittsburgh 13, Pa.

Water and Liquid Level Gauges

Water depth in reservoirs, elevated tanks, rivers, and lakes can be measured and recorded accurately by Bristol liquid level gauges. These include float, pressure bulb, pressure, counterpoise, differential pressure, and air-bubbler gauges.

Metameter telemetering instruments made by Bristol provide remote recording and remote automatic pump control of water level.

A new 24-page bulletin on water level gauges, *Bulletin L-700*, has been published by the firm and may be obtained by writing to The Bristol Co., 131 Bristol Road, Waterbury 20, Conn.

Surfa-slick *Patent Applied for*

SELF-HEATING ASPHALT SMOOTHING IRON

Municipalities! This lightweight, rugged, simple, time and money saving smoothing iron will pay for itself in a few days' use.

HOT IN TEN MINUTES **HOT** ALL DAY LONG

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- SAFE
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- LABOR SAVING
- COMPACT

Dealer inquiries requested

No more building and tending fires on your asphalt jobs!

J. E. WOODS MFG. CO.
1516 First St., San Fernando, Cal.

The Air Forces' Clover Field in Santa Monica, Calif. was paved with Bitumuls, emulsified asphalt produced by the American Bitumuls Co., 200 Bush St., San Francisco 4, Calif. A news story about this product appeared in the March issue.

Air Compressors For Water Works

Air compressors for employment by large cities as well as small municipalities are available from the P. K. Lindsay Co., 97 Tilestone St., Everett 49, Mass. The firm declares that with this compressor large cities can equip every digging crew so that working air is always available, and that small municipalities, heretofore unable to purchase a large unit, can afford the Model 33 to give the crews the benefit of working air.

The Lindsay Model 33 compressor and a 32-pound Lindsay No. 17 air hammer give good service for trench digging. According to the manufacturer, water service crews can cut through eight inches of asphalt macadam as a routine operation with the Lindsay Model 33 compressor and a 32-pound Lindsay No. 17 air hammer.

Plastic Resurfaces and Repairs Floors

Pak-Tamp is a plastic used for resurfacing and repairing concrete floors, trucking aisles, driveways, wood floors, sidewalks, steps, and loading platforms. Unlike ordinary flooring material, it can be worked on just as soon as the floor is laid.

The manufacturer, Paramount Industrial Products Co., University Center Station, Cleveland 6, Ohio, points out that because it sets by compression, heavier loads improve the surfacing.

Pak-Tamp is delivered ready for immediate use with nothing to add or mix. The material is sanitary and easy to clean, quiet, non-skid (wet or dry), easily feather-edged and fire and spark-proof.

A new bulletin on its Pak-Tamp floor resurfacing and repair method is issued by the company.

CITY MANAGER WANTED

CITY OF SARNIA requires the services of a qualified man for City Manager. Necessary application forms may be obtained from the undersigned. Applications in clearly designated envelopes will be received at the City Clerk's Office until May 31st, 1951.

Write to:

M. D. STEWART, City Clerk.
Sarnia, Ontario

EXPERIENCED SALESMAN

having long-standing acquaintance with leading municipal and water works officials and consulting sanitary engineers in eastern territory, is available for manufacturer seeking an expeienced sales representative in the municipal, water works, or sewage treatment field.

For further particulars, references, etc., please write

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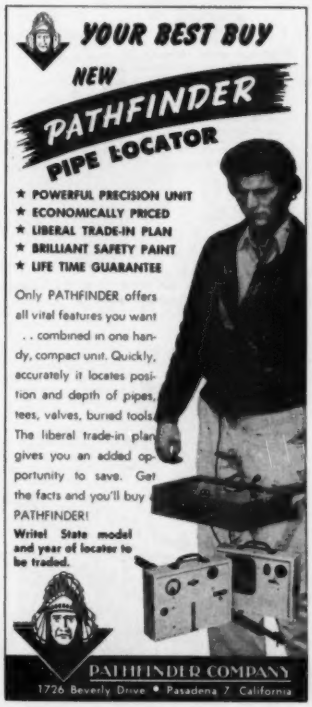
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PIPE LOCATOR
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Only PATHFINDER offers all vital features you want . . . combined in one handy, compact unit. Quickly, accurately it locates position and depth of pipes, tees, valves, buried tools. The liberal trade-in plan gives you an added opportunity to save. Get the facts and you'll buy PATHFINDER!
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Special castings to meet your individual requirements may make use of our large stocks of non-standard patterns.

BELL & SPIGOT—FLANGE —SHORT BODY—PLAIN ENDS — MECHANICAL JOINT — SPECIALS

Sizes—2" to 84"

WARREN FOUNDRY & PIPE CORP.

55 Liberty St. New York, N. Y.
72 Federal Street Boston, Mass.

(*Continued from page 185*)

Oklahoma Community-Development Conference

PROCEEDINGS, COMMUNITY DEVELOPMENT CONFERENCE — *Sponsored by the Extension Division and the Institute of Community Development, University of Oklahoma, Norman, Okla. Mimeo. 96 pp.*

Complete speeches and discussions of the conference held October 25-26, 1950. Most of the speeches come under the general heading of planning and emphasize such phases as traffic, housing, recreation, public health, budgeting and legislating for planning, setting up and operating a planning commission, advance planning of non-federal public works, and city-county planning.

City Government Text

AMERICAN CITY GOVERNMENT AND ADMINISTRATION—*By Austin F. Macdonald. Thomas Y. Crowell Company, 432 Fourth Ave., New York 16, N. Y. 1951. Fifth Edition. 715 pp.*

This fifth edition reflects the changing pattern of municipal government in various ways. It includes, for example, separate chapters on municipal liability and housing, new sections on salaries of municipal employees, and the Pennsylvania plan of local autonomy in tax matters.

Beginning with chapters on the problems and history of cities, inter-governmental relationships, and the theory of city government, Part I of the book goes on to explain the mayor-council, commission, and council-manager forms of municipal government. It also describes the courts, elections, legislation, and municipal politics.

Part II deals with problems of administration—personnel, revenues, planning, zoning, safety, traffic, education and recreation, welfare, correction, health, housing, public works, and utility regulation.

1951 Social Work Yearbook

SOCIAL WORK YEARBOOK, 1951 — *Margaret B. Hodges, Ed. Eleventh Issue. American Association of Social Workers, 1 Park Ave., New York 16, N. Y. January* 1951. 696 *pp.* $5.

The *Social Work Yearbook, 1951*, the first edition to be published by the American Association of Social Workers, follows the familiar pattern of the *Year Book* when it was published by The Russell Sage Foundation, which provided a substantial grant to help finance the early issues. It is now expected to become a self-supporting enterprise.

Part I consists of 73 signed articles by authorities on the topics discussed, which include many of direct interest to municipal officials and community leaders. Among the topics are those on Adult Education, Civil Rights, Community Chests, Employment Services, Housing and City Planning, Public Health, Public Relations, Racial Programs, Settlements and Neighborhood Centers, Vocational Rehabilitation, etc. Each chapter includes up-to-date references and an extensive bibliography. Part II consists of a full listing and description of voluntary and governmental agencies whose programs are integral with or related to the subject matter of Part I.

Electrical Illumination Textbook

ELECTRIC ILLUMINATION—*By John O. Kraehenbuehl. Second Edition. John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. January* 1951. 445 *pp.* $8.

This book presents the principles underlying the specification and design of electrical lighting for commercial and industrial buildings. It stresses the essentials of an adequate and safe lighting system. Important topics included are objective and subjective specification of illumination, color, and shadow; illumination from point, line, and surface source; light control; luminous architectural elements; floodlighting; novelty lighting, and maintenance and economics.

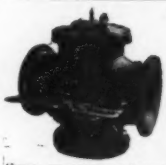
Standards for Large-Scale Residential Development

BRICKS AND MORTALS — *Citizens' Housing and Planning Council of New York, Inc., 20 W. 40th St., New York 18, N. Y.* 1951. 14 *pp.* 25 *cents.*

A non-technical report, addressed to the layman, which compiles the standards to guide housing and neighborhood development in New York City. The report contains sections on fitting housing projects into plans for the entire area; housing at various rent levels; closing the gap between subsidized low-rent housing and the lowest rent housing provided by private enterprise, etc.

While this report considers New York conditions primarily, the criteria suggested should prove of value in measuring prospective large-scale housing projects—public, semi-public, and private—in any large city.

ROSS AUTOMATIC VALVES



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4. Can be equipped with electric and manual controls.

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This valve will permit flow in one or both directions acting as
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Electric remote control — solenoid or motor can be furnished. Adapted for use as primary or secondary control on any of the hydraulically controlled valves.

Also—
Pressure-Reducing Valves, Relief and Surge Valves Back-Pressure Valves, Etc.

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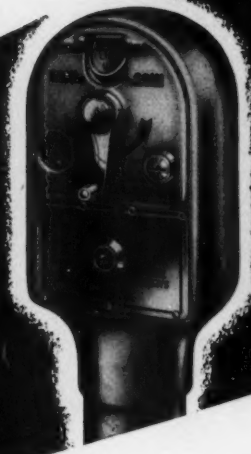

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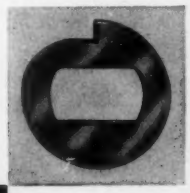

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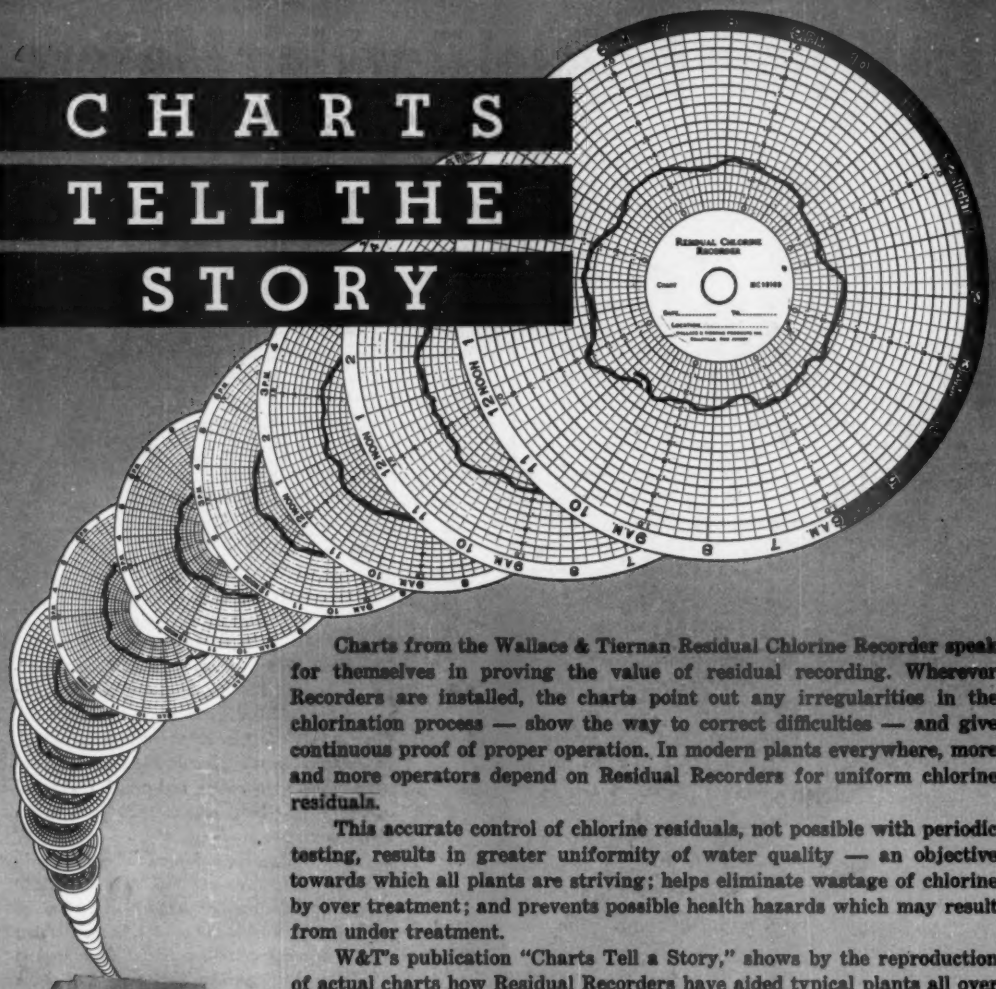

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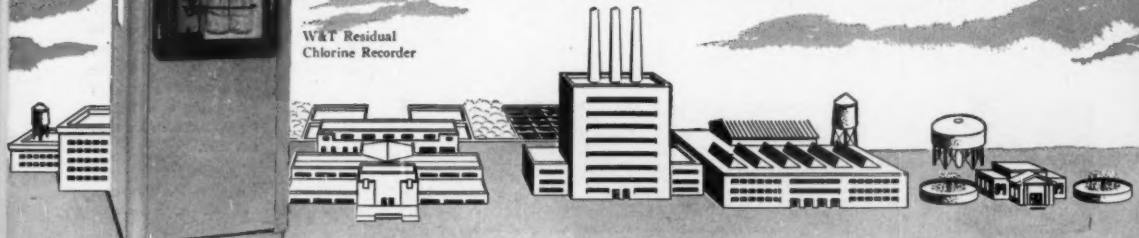

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